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FIRST IN SCIENCE FICTION SINCE 1926

AMAZING

stories

founded by HUGO GERNSBACH

THE WHITE ONES ...luring a man to the other side of never



WRITERS: Brown, Easton, Landers, Pearl, Roesburg,
Russell, Sheckley, Thomas, Thompson, Wightman

ARTISTS: Biamonte, Fabian, Gleeson, Mavor, Raven,
Romesburg





founded by
HUGO GERNSBACH

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COUNTDOWN



HANG ONTO your heads. You'll soon be lifting off into uncharted vistas of the mind, soaring through fathoms of the imagination to faraway worlds and runaway time. Causing all the commotion is a cache of new stories and new columns collected expressly for your pleasure into this, our November issue of *Amazing Stories*.

Behind the typewriters are a variety of experiences, personalities and talents we want you to become acquainted with . . . and to know as living, breathing folks much like yourselves in their everyday concerns. Their gift is to spin an idea into a unique fabric of words enabling you, the recipient, to look at some aspect of life from an unusual viewpoint and to be entertained in the process.

Here are some responses to our authors' acceptance notices and requests for biographical notes from our contributing writers in this issue:

Author of "Furphy's Law"

Dear Mr. Bernhard,

Enclosed is a signed copy of your reply memo concerning purchase of my story "Invisible, Invulnerable, First Man Through Time" (changed to "Furphy's Law"). Many thanks for the opportunity you have presented myself and other aspiring writers. Below is the brief biographical sketch you requested.

I am 29, married for keeps, and father of a four-year-old whirlwind. By

the time you read this, child #2 may have arrived, as s/he is due within days. When I'm not spending time with my family or working at the bookstore I manage, chances are I'll be reading, writing or sketching. Beside contributing to fanzines I have written for Ellery Queen's Mystery Magazine and freelanced to the Burlington County Times. For the latter I now write two regular columns: a weekly humor piece and a monthly science fiction news and reviews column. (See enclosed) In anticipation of becoming a writer, I one summer ran off with The Clyde Beatty-Cole Brothers Circus and spent an arduous month setting up, tearing down, and selling popcorn in the bleachers. Now if I could just get a story out of that . . .

And every word of it true. I'll be looking forward to seeing my tale in print, and will be plugging *Amazing* in my column. Look for copies in your mailbox.

Best,
Richard Roesberg
Northfield, New Jersey

Author of "The Macrophage Connection"

Dear Mr. Bernhard:

I received your memo concerning the sale of "On the Evocation etc." yesterday. Wow!!! My first story and my first sale! (New title above.)

Biographically speaking, I am female, 43 years old, married, have 2

teenage daughters, one of whom is a freshman here at Cornell. I have a B.A. from University of Penn., and a M.S. in Animal Nutrition from Cornell. I hold the position of Research Technician at the above lab and the Professor with whom I work is engaged in various studies such as the effect of nutrition on the immune system of the host (dogs in this case), viral work in cattle and swine and a few other odds and ends. Thus my work covers several disciplines such as nutrition, physiology, virology, immunology, etc., etc.

We live on a 110-acre farm about 20 miles north of Ithaca, on Cayuga Lake, and raise Arabian horses, hay and hell (also some corn, punny and otherwise).

Actually, I am quite conventional as far as science-fiction writers go, never having been a pretzel-knotter, a Dutch Elm Bark Beetle enumerator, a bull dancer, gold fish salesman or any of the other interesting and various occupations which other writers list. However, I was the first female to be admitted to the summer Horse-shoeing classes at Penn State (about 10 years ago).

I have another story which I will be sending you shortly. Again, thanks for the sale! It really made my month!

Sincerely,
Alma Jo Williams
Ithaca, New York

Author of "Prosthesis"

A note from Ray Brown:

I have lived 31 years, spending my time much like everyone else.

I compose music and sometimes have dry spells. The last time I had one it struck me that it would be good

to fill the time with some activity other than sitting cursing blank sheets of music-paper, so I decided to try to make my typewriter produce a good old-fashioned scary science-fantasy. "Prosthesis" is what came out. It's the first story I've written in many years, and my first sale.

Ray Brown
Worthington, Ohio

Author of "Closest Kin"

A note from Thomas Easton:

Dr. Easton is a writer of science and science fiction, as well as book reviewer for one of the major sf magazines. He is a member of the Science Fiction Writers' Association. So far, his major work has been as senior author of the introductory biology text, *Bioscope* (Mayfield, 1979). He lives in Belfast, ME, where he tends his typewriter and his garden with approximately equal devotion.

Thomas A. Easton
Belfast, Maine

Author of "The Hylom Texts"

A note from Lamonte Thompson:

I have been working at various odd jobs for the past five years while learning the wonders of writing. My last job was as a farm hand and I am now planning to explore new areas. I have a BA in Economics. This is my first sale and I think it's a good place to start. Life has been good!

Lamonte H. Thompson
San Diego, California

Author of "The White Ones"

Dear Mr. Bernhard:

I wanted to thank you — not only for accepting my story — but for your kindness and encouragement. I had always assumed that publishers were severe people. Stereotypes, stereotypes! You proved me wrong. Good wishes to you.

Sincerely,
Wayne Wightman
Modesto, California

P.S. Biographical information: I was born in 1946 and grew up on a farm in Missouri. I now live in central California where, until early this year, I taught writing at a local college. During my last year there, I decided it was time for me to quit work, get serious, and to start writing all those stories I had been squirreling away in the back of my head for the last ten years. "The White Ones" was my first effort.

I believe writing must first be entertaining, but if it can also educate the reader's feelings, then it deserves to be called literature. I'm more interested in educating the reader's heart than his head.

I'm also an ailurophile.

For those who might not know . . . an "ailurophile" is one who loves cats. I, myself, was glad to know this fact since I am one and I do.

Author of "Ariel's Disease"

A note from Jerome Richard:

Edgar Pearl is the name of an alien who inhabits the body of a freelance writer living in Seattle. *Ariel's Disease*

is his first published science fiction story.

Jerome Richard
Seattle, Washington

WE WELCOME Steve Fahnstark to our ranks as the creator of *FANS, PROSE & CONS*, a new column especially for those readers who really like to dig deep and participate in the inner workings of the world of science fiction. Steve is the editor of *New Venture* magazine and chairman of MosCon I. He brings lots of knowledge and a nice flair for putting it all together for hungry fans . . . new and old. He asks for reader response to assure widest possible coverage . . . and we'll repeat his message: send zines and con news to our newest columnist at NW 440 Windus St., Pullman, WA 99163.

AS WE are rounding out our writer participation, you will notice an accompanying enrichment of our artist participation. According to plan, our editor, art director and publisher have been working together to bring you exciting new combinations of talent . . . from pen and brush, as it were . . . to dance your eye and mind through our pages . . . always stimulated, always entertained. We are presenting some established SF artists such as Fabian, Gleeson and Biamonte, along with those new to the field such as Mavor, Raven and Romesburg. Variety is the spice we are using to keep *Amazing* vital and you intrigued.

NEED WE say again how excited and grateful we are for the terrific response we have been receiving for our new look and new policies. One of

the most rewarding aspects of this business is dealing with so many interesting people . . . creative, generous, productive and just plain nice. We feel each and every one of you deserve our deepest consideration and thanks.

ISAAC ASIMOV fans will get an added kick out of one of the stories in this issue. Even the good doctor himself would get a chuckle or two. We'll talk about it fully in the next issue of *Amazing*.

WRITERS WHO want to compete for inclusion in *Amazing* should submit manuscripts to P.O. Box 642, Scottsdale, AZ 85252 in the following form: typewritten, double-spaced, unfolded, up to 9000 words, with SASE enclosed for easy return of the story. We are receiving record numbers of submissions, and if there is a delay of up to three months, we are sorry but it seems sometimes unavoidable to give our best consideration and be speedy at the same time. Occasionally, manuscripts even get lost — in which case we hope all of you keep copies and will be able to re-submit your work. Just know we are sincerely trying to keep abreast of it all and give everyone a fair shake.



Dear Mr. Bernhard:

Wow! Great!!! Congratulations on bringing two of my favorite mags back to life. I thought they were real goners. I like your new look. This is the fantasy and science fiction that corrupted and snared me in my youth (age 8 — am now 43). Except for IASFM, I thought it was lost forever amongst the New Wave type, introspective philosophy type, anti-hero type, etc. ad nauseum. The short picture stories add to the spice of the general potpourri. I believe strongly in visuals.

Sincerely,
Alma Jo Williams
Ithaca, New York

Dear Sir:

I noticed your help-wanted' ad in the May, 1979 issue of *Amazing Stories*. This letter is in response to letters "C" and "D" of that ad.

I have a Master's in Human Communication, and currently teach at the local community college in my area. This term (Spring) I am teaching a course entitled "The Future." Even though the course title is not Science Fiction, (Your ad read: "SF college course instructor . . ."), I am quite certain that my course content is the same as that which you requested. Let me explain.

At the outset of my course, I spend a brief time with the fundamentals of

the communication process — this is necessary since I teach within the Comm. dept. By about the third meeting, we begin discussing what we think the future will be like. My lectures not only deal with the ramifications of a technologically advanced society, (e.g. holographic communications, mathematical theory of information, computer-assisted learning, and the like), but also contain discussions of what noted futurists and SF writers have to say about near and distant "possible worlds" — people like Clark, Toffler, McLuhan, Farmer, Heinlein, Del Rey, etc., etc.

Generally, the most popular portion of my class instruction is the introduction of the scenario. By this I mean that I present my students with a futuristic dilemma (scenario) to be examined or solved through group discussion. For example, when we discuss an area of investigation like Body Language, I might ask my students what they think the first alien/terrestrial contact may be like. Will the study of the "body language" of an alien culture be important? If the life forms are significantly different from our own (this is likely) will we be able to tell the difference between an insult and a friendly greeting? (As an aside, I have also done original research on human greeting behaviors — to be published in a journal article soon).

This should give you a general idea of the course content. Quite naturally, the results generated from these discussions are often surprising and sometimes intriguing. More often than not, we talk about what our favorite SF authors have to say about the future.

The point of this letter is that some of these discussions might make interesting reading in a publication

like your own. Perhaps as a column? What do you think?

For myself, I think that SF is probably the most entertaining and exciting form of literature. Although I have a rather wide range of interests (both Oceanography and Archaeology are hobbies), SF has always been my first love.

During the past four years, I have written fifteen or so SF stories — shorts and novelettes, that have been (so far) for my own amusement. I feel that they offer at least some novel ideas and aspects in story telling. Shortly I will forward a manuscript to you.

Please let me know your thoughts about my class lectures/discussions. I will be more than happy to forward an example if you are interested.

Sincerely,
R.M. Houghlum
Eugene, Oregon

P.S. Enclosed is my resume. Also I enjoy *Fantastic/Amazing* very much indeed. I only wish they were published monthly (I'm sure I'm not alone!)

We look forward to a sample column on your lecture/discussion class, "The Future." Our readers would undoubtedly enjoy the content as much as your students.

Dear Mr. Gohagen:

Everything in the May and August issues of *Amazing Stories* was to my liking. The artwork and story selections were superb. My good judgement was overcome by such a strong desire to associate myself with this new quality at *Amazing Stories* that I sent in one of my stories,

"Bamalanjays and Butterflies." I was so intrigued by your reader participation series, "Mecano Sapiens," that I also sent in "An Adventure of Numan" that I hope you may be able to use.

Mr. Michael P. Kube-McDowell's story, "The Inevitable Conclusion," was an excellent presentation of that doctrine popular with industrialists of the last century called Social Darwinism.

That doctrine is, of course, flawed in the eyes of many because it leaves no place at the top for those who are reluctant to advance at the expense of their fellows. The doctrine also blissfully ignores the fact that men, unlike animals are in a social and technological setting that in no way gives all an equal shot at success.

Beyond the above, some would contend that even from a biological concern for the survival of the race, the doctrine of Social Darwinism makes no sense. Survival of a species depends on the existence of a wide variety of genes in the population so that at least a few will have the characteristics that enable them to flourish in a changed environment. To the extent that a given human society restricts its gene variety to a certain type that it happens to feel is best "fit to survive," that society limits the survival potential of the race to adapt to an environmental change over which it has no control.

In the last analysis, one is forced to the "inevitable conclusion" that the doctrine of Social Darwinism is nothing more than an excuse used by those who rule a society to exploit those less fortunate than themselves. As Mr. Kube-McDowell correctly notes in the conclusion to his story, however, the doctrine will no doubt always be with us. Those who believe in Social Darwinism can always

reduce those who do not to their level by starting a war.

I am greatly looking forward to the next issue of *Amazing Stories*. I hope that I will find the same high standards that were applied to the May and August issues will have been applied to the November issue.

Sincerely,
Joseph M. Shea
Washington, D.C.

Thank you for your good wishes and comments. Another way of looking at Kube-McDowell's story is that the attempt of forcing any one idea of "perfection" on people — homogenizing society — "inevitably" leads to war. When individualism, progress, genius etc. are stifled by totalitarian social control (for "everyone's good," of course) — people REBEL.

Dear Editor,

What's this! I have just received the latest issue (May 79) of *Amazing* and *Fantastic* (April 79). I suppose it must be E.S.P. or something similar on your part Mr. Bernhard but I could not believe my eyes — Gollentz, Ed Hamilton, West, Ray Gallun, Binder.

Would it be all right to say *Fantastic*?

I wish you well in the future and sincerely hope that your proposed blend of old and new stories with real endings will please many of your readers. It would certainly please me.

All the best,
Keith R. Bradley
Leicestershire, England

We hope to keep on pleasing.

Dear Mr. Gohagen,

It's about time. I just caught the August issue of *Amazing*. Thanks for starting the Interstellar Connection. I buy an average of fifteen science fiction books a month. I depend on thorough reviews in selecting the good stories from the stories with slick covers.

Mr. Staicar does an excellent job of reviewing. But I do have one complaint. In the future I hope the number of reviews will double and then triple.

Thanks again and keep up the work as a progressive science fiction magazine.

Respectfully,
Larry Teufner
Warren, Michigan

Staicar's column is longer this month, and he will be contributing an interview-review feature in the future. Glad you like what we are doing.

Dear Editor;

I realize that light verse—or poetry of any kind for that matter—is an unusual submission to make to a magazine of science fiction.

Still, the May issue of *Amazing* was so innovative in its "Golden Age" concept, its features (e.g. "Numan") and illustrations, that I thought I'd give you a try, anyway. I figured, what the heck, an awful lot of your readers out there must have "Spaceboys" (and Spacegirls!) of their own, driving them nuts. (My own 12-year-old has seen *Star Wars* 10 times!!) Perhaps, as a filler . . . ?

Thanks for any consideration.

D.M. Carroll

SPACEBOY

We have a kid that's a real
outer-space freak
He's seen each and every
Star Trek re-peat;
Right now he's in the cellar,
with plans to go far
— Building his own
Battlestar Galactica!

Our spaceboy has *Star Wars*
oozing from each pore,
Spacetoys and spaceposters
hang from ceiling to floor;
Yet, you can tell with just
one look at his room
— It's never had a *Close Encounter*
with a broom!

At least there's one thing
he'll never have to fear;
No *Body Snatchers* will invade
his room this year.
For, by all the
extra-terrestrial gods
— There simply isn't room
in there for any pods!

Dennis M. Carroll

Dear Mr. Gohagen:

I just wanted to write you this brief note and express my sympathy and support for the general direction in which you are taking *Amazing Stories*. I am an old-fashioned type of science fiction reader who likes to be entertained when he reads. To my mind Asimov's *Sf Adventure Magazine* is and shall remain the leader in this area, but your new policies are a step in the right direction for both *Amazing* and science fiction in general.

Best,
Walter Noblitt
Fargo, Indiana

The Interstellar Connection

Book Reviews

by Tom Staicar

Space Opera, by Jack Vance. (DAW, \$1.75) Everyone knows that "space opera" has to do with blazing blasters and the spiritual descendants of Doc Smith and Flash Gordon. In this novel, Jack Vance adds a new meaning. The elderly Dame Isabel Grayce takes her opera company on a whirlwind tour of a variety of planets. She is able to get Bernard Bickel, "eminent musicologist, space traveler, lecturer and bon vivant" to come along, as well as the opera staff and her bumbling nephew Roger Wool, for whom she has little respect. Wool falls in love with the mysterious Madoc Roswyn, whom he allows on board the ship as a stowaway.

Vance is a master at vivid and believable characterization. Two hours away from Earth, Roger Wool has a pallor to his face, the opera company is restless and homesick. Dame Isabel "... kept to her cabin, suffering, so the rumor went, from acute space-sickness: a report lent credence by the frequent comings and goings of Dr. Shand, the ship physician."

On each planet, Dame Isabel is convinced the dull, primitive cultures can be uplifted by the superior cultural achievements of Earth's operatic masters. On one planet, the audience is convinced that opera is intended as a torture for them. One planet insists that a preview performance be held for a monitor. He listens and then declares the opera company



totally incompetent. His hearing is so excellent he thinks the motions of the conductor's baton are part of the music. The monitor demands his fee of 600 flashlight batteries (the acceptable medium of exchange). This sends the company into a rage. The musicians finally cool off by forming The Tough Luck Jug Band, complete with washboard percussionist.

Space Opera is fun to read and a rare example of humor in SF as it should be handled.

Tomorrow and Beyond, Edited by Ian Summers. (Workman, \$19.95 hardbound, \$9.95 paperback) I love SF illustration books. Short of owning all the old pulp magazines and a few thousand early paperbacks, there is no other way to enjoy the cover art to buy these books. Although fine ones have come out edited by James Gunn, David Kyle, Lester del Rey and Brian Aldiss, among others,



there are still vast numbers of beautiful covers which have not yet been reproduced.

Even if you own all the books, from Gunn's *Alternate Worlds* to the Brian Ash book, *The Visual Encyclopedia of SF*, you won't have more than a few of the illustrations presented in *Tomorrow and Beyond*. The book is mainly composed of paperback covers of the 60's and 70's, along with very recent magazine art and a few paintings which have not appeared elsewhere. Leading artists like Boris Vallejo, Vincent DiFate, Paul Lehr and John Schoenherr are among the 65 artists represented. Themes like visions of future cities, spacecraft and other worlds are used to group the works.

The pages seem ready to burst with color. The sense of wonder dormant in the most jaded SF fan will rise to life again after a few minutes spent with these paintings.

It's great that SF artists are finally getting some recognition along with the financial rewards they had been denied so long. Their labors of love

were paid for with a few dollars, regardless of their imaginative and visionary uniqueness. Now, with posters, calendars, record album covers and books like this one, some of the artists are beginning to make some gains. *Tomorrow and Beyond* is a book well worth its price and I can't imagine an SF reader who would be disappointed by its contents.

They Walked Like Men, by Clifford D. Simak. (Avon, \$1.95) The first selection I ever bought from the Science Fiction Book Club was *The Worlds of Clifford Simak*. It was 1960 and I was in junior high school. I started reading all the Simak books I could find. Luckily, he was writing one or two a year and his earlier classics like *City* were being reprinted. All these years later I'm still convinced that stumbling onto a Simak novel can turn a person into an SF fanatic like me. A lot of hot writing talents have blazed and then cooled off since Simak started writing but he is as popular today as ever.

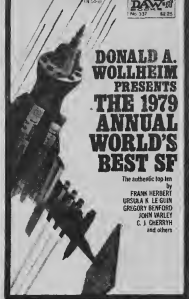
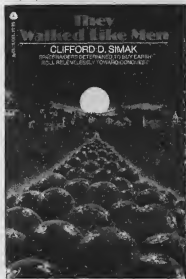
They Walked Like Men is a gripping novel first published in 1962. Simak manages to maintain the book's tense mood from the first paragraph to the last, using just the right effect at the right moment. Newspaper reporters Parker Graves and Joy Kane uncover a plot by space aliens to legally purchase enough Earth real estate to destroy our economies, put people out of their jobs and homes and then sell the planet as a resort before mankind knows what happened. In this way, the aliens will satisfy their peculiar code of ethics and also annihilate humans without risking an open war.

The mood is one of terror as the two reporters find they can trust no one except each other. The aliens, who move around in bowling ball type spheres, can change shapes and group together to become objects or

even people. Parker finds a box full of four-inch-tall miniature humans which the aliens use to create full-sized pseudo-humans. At one point, he feels his car steering wheel gripping his fingers and finds that the "car" is really an alien illusion. He is helpless to control it as it speeds up to 60 miles per hour and goes out of control.

Even everyday surroundings begin to take on an unreal look: "The city had that bleak, frosty look of a thing not quite alive, a sort of sinister fairyland that is on the verge of winter." Simak makes the unbelievable seem real by using ordinary people in extraordinary situations, along with small details which add to the realism. A fly slowly crawls across the round, bald head of the alien "human" who announces the closing of the city's largest department store. The dry leaves crunch beneath the shoes of Parker Graves as he walks up the sidewalk to the abandoned house used as the aliens' base of operations.

Clifford D. Simak has enriched SF with books like this one. He is still writing, in his sixties, with two new novels out, *Mastodonia* and *Fellowship of the Talisman*.



The 1979 Annual World's Best SF, Edited by Donald A. Wollheim. (DAW, \$2.25) Between 1965 and 1971, Terry Carr and Wollheim co-edited this series. Since then, Carr has worked for Del Rey Books and Wollheim has published his own DAW annuals. Both are excellent anthologies which leave the competition far behind. I have never been able to choose between them. Luckily, I don't have to as I'm a Gemini and buy both.

Wollheim's 1979 collection is as well balanced and exciting as ever. The stories included this time tend to be sophisticated and rather cerebral, although still highly readable. The interest is more in the ideas than in the action for the most part. Included are tales by Frank Herbert and F.M. Busby, Jack Chalker, C.J. Cherryh, Gregory Benford and James Tiptree, Jr., among others. Ursula Le Guin's story is about a worldwide movement to make everyone "sane" according to one leader's guidelines. John Varley's "The Persistence of Vision" is one of the finest stories I've ever read.

I was pleased to see it chosen for Wollheim's annual but, now that it has also won the Nebula Award, its longevity is assured anyway.

There's no good reason to deny yourself the pleasure of the best stories from the magazines and anthologies when annual collections like Donald A. Wollheim's are so conveniently available.

Untouched By Human Hands, by Robert Sheckley. (Ace, \$1.75) This is a collection of 13 stories which range from humor to horror. Sheckley has never been equalled for his wacky sense of the absurd and his wild imagination. Who else would have dreamed up a home of the future with such indispensable gadgets as an Auto-Cook, Recipe-Master and Auto-Bartender, or an electric Auto-Towel after a brisk shower? Of course, in "Cost of Living" the homeowner has to sign a lifetime installment debt con-

tract with payments to be made by his children all their lives. Children who grow up to resent this system are told to be thankful they weren't born in the old days when people didn't have all these labor-saving devices and technological marvels.

The title story is about a marooned spaceship crew which runs out of food and must find a way to separate the food from the poison among shelves of brand-name items. They have a shaky knowledge of the language and cannot tell which labels are which. Desperate for drinking water, they decide to follow the slogan, "Everyone Drinks Voozy!" The Voozy liquid creeps after them and backs them into a corner. They mis-translated "Voozy Drinks Everyone!"

Not all the stories are outstanding, but each one has the Sheckley touch. Ace Books is to be thanked for bringing several of his novels and collections out in new editions. His loyal fans have had to guard and preserve their old paperbacks for too long a time.

Broca's Brain - Reflections on the Romance of Science, by Carl Sagan. (Random House, \$12.95) At this moment, man-made objects are on their way out of our solar system and speeding toward the vast emptiness of interstellar space; author-scientist Carl Sagan and his wife designed a plaque which is being carried by Pioneer 10 as a message to intelligent beings beyond our region of space. Sagan was part of the Voyager project which placed two vehicles on a trip to the stars, each containing records of Earth sounds such as languages, volcanoes and the surf. He co-wrote a book called *Murmurs of Earth - The Voyager Interstellar Record* (Random House, \$15.00; forthcoming in paperback from Del Rey,

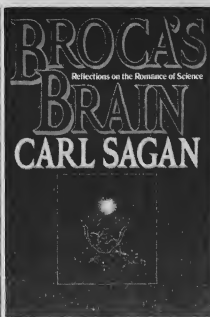
\$6.95) in which the list of sounds and photos on board the Voyager space probes is explained.

Sagan is used to thinking in terms of vast distances and hundreds of centuries of time. He is a 44-year-old Cornell University professor whose love of astronomy began when he was 12. At that age, his grandfather asked him what he wanted to do when he grew up. He replied that he wanted to be an astronomer. "Fine," his grandfather said, "but how will you make a living?" Sagan has been doing quite well in his chosen field, lecturing to sold-out audiences, appearing on TV talk shows and writing books. His own educational TV series appeared on the Public Broadcasting System.

Two of his previous books were top bestsellers, unusual for science non-fiction. *The Dragons of Eden* (Ballantine, \$2.25) dealt with the evolution of human intelligence, and won him the Pulitzer Prize. *The Cosmic Connection* (Dell, \$1.75) is an illustrated excursion into mankind's role in the universe. The most exciting science writer since Isaac Asimov, Sagan has become the favorite science expert of millions of high school and college students across the country.

Broca's Brain is a collection of speculations about science which deals with a variety of topics. Sagan's enthusiasm for new ideas and his passion for the "joy of knowing" are present in full force. The title of the book was inspired by Sagan's visit to a museum where the brain of 19th century neurologist Paul Broca was on display. It started him thinking about human intelligence.

Topics covered range from the lives of rocket pioneer Robert Goddard and physicist Albert Einstein to the search for intelligent life in outer space. He discusses robots in our future and the meaning of new know-



ledge gained about the nature of the planets uncovered by recent space probes. About Saturn's largest moon, Titan, he says: "There may be surface volcanoes made of ice instead of rock, spewing out in occasional eruption not liquid rock but liquid ice — a lava of running methane, ammonia and perhaps water."

The scientist's frank remarks about several subjects will probably inspire some angry rebuttals. He attacks religious doctrines which try to impede the search for new knowledge by silencing such people as Galileo whose findings go against the accepted ideas of the time. He asks that people seek answers based on verifiable evidence rather than accept things which merely fill their emotional needs. His examples are such fields as ESP, astrology, the Van Daniken theories in *Chariots of the Gods* and the Velikovsky theories in *Worlds In*



Collision. Sagan attacks each as lacking scientific evidence to back them up.

He both praises and attacks SF in a section called "Science Fiction — A Personal View." He ends up saying SF has contributed much to mankind by inspiring scientists to explore questions and ideas which they first encountered in SF.

In a discussion of the value of solar probes, he mentions that Earth may be undergoing a severe climate change, possibly toward a long ice age. He contends that new knowledge of similar changes on other planets may tell us what we need to know about our future. At one point in history, colder weather destroyed the tree-dwellers, leaving baboons and early humans alive since they could live on the land. "We may owe our very existence to climatic changes that on the average amount to only a few degrees," Sagan says.

In a fascinating final section of Broca's Brain, Sagan discusses the ideas of Stanislaw Grof, who has studied the LSD experiences and near-death visions of hundreds of subjects. There seems to be a basis for comparison in several world religions' description of the Creation and people's subconscious memories of the experience of their own birth. The womb, where all is given and there is no anxiety can be symbolized by the Garden of Eden. The Big Bang theory of the origin of our universe may be compared to our first view of light at birth. These speculations are some of the most interesting in the book.

Carl Sagan believes we are fortunate to be living in the one age in all of history in which we stand close to the answers of the secrets of the universe. His enthusiasm, knowledge and ability to write well all combine to make Broca's Brain a book worth reading.

Fans, Prose & Cons

by Steve Fahnstalk

MANY DIEHARD science fiction readers are not fans in the usual sense; I read sf voraciously for twenty-plus years before I knew what "fanzines" or "cons" were. So, for the benefit of those AMAZING readers who are similarly deprived, here's a capsule description.

A fanzine (abbreviated "zine") is an amateur magazine of or about sf, containing stories, poetry, articles, opinions, reviews and the like; and all is written by the fans themselves — no professional qualification is necessary for participation. The quality ranges from semi-professional to awful, both in content and in reproduction. There are news zines; critical zines; general-interest zines; personal zines, with all or most of the content written by one person; Amateur Press Association zines, sort of a collective communication; and everything between.

The zines have special labels and language, too. Match these labels with the above zines: "newszines"; "sercon" (serious-constructive); "genzines"; "personalzine"; or "perzine"; and "Apazine" — they give fan activity a special flavor.

A con is a weekend sf convention, three or more frenzied days and nights of talking sf, meeting authors, making friends, attending panels, seeing sf films, having parties and much more. Cons range from the 100-300-person "relaxicon" through the 800-1500-person regional cons (Westercon, Noreascon, etc.) to the gigantic Worldcon (over 5000 people attended Iguacon in Phoenix last year); "and a splendid time is guaranteed . . ."

If you'd like to try before buying, do this; for zines send the appropriate amount to the listed address, and request a sample copy; to find out about cons, send a stamped, self-addressed envelope (SASE) to the con committee — and I'll guarantee that once started, you'll become addicted. Now let's look at the listings.

FANZINES

LOCUS, PO box 3938, San Francisco, CA 94119; 12 for \$9, monthly. Charles N. Brown's zine covers everything newsworthy in professional sf; with detailed book listings and summaries of publishing info, market reports, notes on people, detailed con reports, media reports, and a column on how to write sf by Algis Budrys. Well-printed and well-illustrated with photos and cartoons, this four-time Hugo winner is a must for the fan or serious sf reader.

SCIENCE FICTION REVIEW, PO box 11408, Portland, OR 97211; 4 for \$6, quarterly. If **LOCUS** is the newszine, **SFR** is the zine: a multiple Hugo winner, **SFR** is a brilliant mish-mash of reviews, letters (fan & pro), interviews, and columns by editor Richard E. Geis, John Brunner, and others, combined with

fiction by the editor, and spiced with excellent interior art by Tim Kirk, Bill Rotsler, and others (a third of **SFR**'s charm is the hilarious Gilliland cartoon work.) Note: Geis' fiction tends to the explicitly erotic, so if you're not liberally minded, beware.

JANUS, % SF3, Box 1624, Madison, WI 53701; 4 for \$6, quarterly. Janice Bogstad and Jeanne Gomoll edit a zine with an unusually gentle feel to it. There is the usual blend of news, articles, reviews, con reports, poetry, etc; complemented very well with excellent artwork by such people as Victoria Poyser, C. Lee Healy, Jeanne Gomoll, and Ole Kvern. While it's not overtly feminist, **JANUS** is oriented toward liberated people. Highly recommended.

PHOSPHENE, 1016 Beech Ave., Torrance, CA 90501; 3 for \$2, quarterly. Gil Gaier's perzine is warm, personal, and loving. Like most perzines, **PHOS** has a semi-diary format; Gil writes about his life, feelings, and friends. The best possible introduction to perzine's is **PHOS** — get it!

WESTWIND, PO Box 24207, Seattle, WA 98124; 12 for \$7 (includes club membership), monthly. A typical clubzine, this one talks about Seattle's 1981 Worldcon bid, and has art by local people including Victoria Poyser among others. For a valuable look at sf art, read Jon Gustafson's book review column; he knows sf art. Great for anyone, not just Northwest people.

FILE 770, 14974 Osceola St., Sylmar, CA 91342; 4 for \$2, irregular. Mike Glycer's fannish answer to **LOCUS**; chatter and smaller. Much is about Los Angeles fandom, but this is more

personal and in-depth than *LOCUS*, and more of interest to the serious fan, including club news and reports, fanzine reviews, and has illustrations from many fine fanartists like Rotsler and Dave Vereschagin. A good buy.

NOUMENON, Brian Thurogood, Wilma Road, Ostend, Waiheke Island, Hauraki Gulf, New Zealand; 10 for \$11, every five weeks. From Kiviland comes a power-packed zine; small but impressive. Its profusely illustrated, and contains the usual news, reviews, etc. The best features are its lettercolumn and a column of sf art by Rollo Treadway; also Leigh Edmonds' sf music column. Even we North American fans should have this one.

Next issue, I'm going to discuss *Apazines* and *Apas*. For zine reviews and con listings I need input, though. Please send zines and con news to me at NW 440 Windus St., Pullman WA 99163. Until next time, **CLEAR ETHER!**

CONVENTIONS

SEACON 79/37th World SF CON, Brighton, England, — August 23-27. US memberships to Anthony Lewis, Box 429, Natick MA 01060. Attending: \$15; supporting: \$7.50. Guests of Honor, Brian Aldiss, Fritz Leiber, Harry Bell. Join now to vote for the Hugos.

STELLARCON 79 — August 25-26. \$5 to PO box 1295, Joplin MO 64801. Panels, films, usual events.

NORTHAMERICAN — August 30-September 1. \$25 to PO box 58009, Louisville KY 40258. GOH: Frederick Pohl, George Scithers. America's answer to overseas Worldcons.

PHLANGE — September 28-30. \$7 (\$9 after 9/15) to Barbara Geraud, 1202 Benedum-Trees Bldg., Pittsburgh PA 15222. GOH: Gene Wolfe.

MOSCON 1 — September 29-October 1. \$6 (\$10 after 9/3) to PO box 9141, Moscow ID 83843. GOH: Robert A. Heinlein (health permitting), Verna Smith Trestail, Alex Schomburg. First Lensman awards plus usual events.

NONCON II — October 5-7. \$8 (\$10 after 9/1) to Box 1740, Edmonton, ALTA T5J 2P1, Canada. GOH: Gordon Dickson, Eli Cohen. Dead Cat Party, Costume Baccanal, usual events.

FIFTH WORLD FANTASY CONVENTION — October 12-14. Attending: \$15, (\$20 after 9/1); supporting \$3 to 43 Kepler St., Pawtucket RI 02860. GOH: Frank Belknap Long, Stephen King, Michael Whelan. Vote for Howard awards.

MAPLECON II — October 26-28. \$7.50 (\$10 after 10/1) to PO Box 2912 Station D, Ottawa ONTARIO K1P 5W9 Canada. GOH: Harry Harrison, Norbert Spehner.

CONCLAVE — November 2-4. \$6 (\$8 after 9/16) to "Waldo and Magic, Inc." 117 Goodison, EMU, Ypsilanti MI 48197. GOH: A.E. Van Vogt. Usual events plus EMU Madrigal Singers.

NOVACON — November 2-4. £2 to 124 Galton Rd., Smethwick, Walsley, West Midlands, England. Not to be confused with:

NOVACON WEST — November 2-4. \$10 (\$15 after 9/15) to Jan Howard Finder, PO box 428, Latham NY 12110. Free to UK or Eire passport holders & SFWA members. GOH: Bob Shaw, Jack Cohen. TM: Bob Tucker. ●

AMAZING FACTS

Submitted by Alex Saunders Rexdale, Ontario Canada

MANY EARLY science fiction writers proved truly prophetic. Take these examples:

"The Brick Moon" by Edward Everett Hale contained the 1869 prediction of an artificial Earth satellite for navigation by ships at sea, and a manned space station.

"Twenty Thousand Leagues Under the Sea" by Jules Verne; this first successful science fiction writer introduced, in 1870, the prophetic *Nautilus* submarine of the mysterious and fanatical Captain Nemo.

"Dream of the Earth and the Sky" by the Russian rocket pioneer and space flight theorist, the "Father of Astronautics," Konstantin Edwardovich Tsiolkovsky (1857-1935), also anticipated a man-made satellite for scientific purposes in 1885.

"Master of the World" by Jules Verne predicted aerial warfare in 1886.

"Caesar's Column" by Atlantis-believer Ignatius Donnelly, forecast in the 1880s the use of poison gas, workers' revolts and television newsreels.

"The Angel and the Revolution" by George Griffith envisioned in 1893 a devastating war which used the 1903 inventions of the aeroplane and the aerial torpedo.

"The Crack of Doom" by Robert Cromie foretold in 1895 the atom bomb, and indicated its destructive force might destroy our planet itself.

"On Two Planets," a 1000-page interplanetary story by the German novelist, Kurd Lasswitz, told of such marvels as artificial satellites being used as space stations. This

was in 1897.

"From the 'London Times' of 1904" by Mark Twain came the prediction of television which, in 1898, he called the "telectroscope."

"The Land Ironclads" by H.G. Wells described the revolutionary role of the armored war tank in 1903.

"The War in the Air" by H.G. Wells was prophetic about aerial warfare in 1908.

"Ralph 124C41 PLUS (subtitled 'A Romance in the Year 1660') by Hugo Gernsback (*MODERN ELECTRICS*, April, 1911, and serialized in the eleven succeeding issues up to March, 1912) made the following technological prophecies which are listed alphabetically:

Acquacades; Automatic Music; Automatic Packaging Machines; Blood Transfusion; Electric Elevator Mechanisms; Fabrics made from glass such as Nylon; Floodlit Night Games; Fluorescent Lighting; Hydroponics; Juice Boxes; Liquid Fertilizer; Loud Speakers; Magnesium alloys for Lightweight Construction; Metal Foil; Micro-Film; Paper made from Straw; Plastics; Public Background Music; Radar; Radio-Directional Range-Finder; Radio Networks; Roof-top Helicopter Service; Rustproof Alloy Steel; Skywriting; Sleep-Teaching Device (called a "Hypnobiroscope" by Hugo Gernsback); Solar Energy for Heat and Power; Space Travel; Synthetic Fabrics like Nylon, Rayon, Orlon, etc.; Tape Recorders; Television (Hugo Gernsback was the first writer to put that term into public use); Thought Recorder (Lie Detector); Tin Foil; Vending Machines that dispense hot and cold Foods and Liquids; Vacuum Tube; and Voice Prints.

THE WHITE ONES

by Wayne Wightman

Our hero is a seasoned spacer who would prefer to ignore politics in the course of his business and in the interest of his personal quest for the "White Ones." Who are these mysterious beings and why do people go to such lengths to find them? Perhaps finding them depends directly upon the ethics one employs in the search.

*Illustrated by
Tony Gleeson*



GLEESON —

WHEN THEY came out of warp drive, Saxon congratulated himself: he was four rubies closer to his goal than he would have anticipated only 24 hours earlier. The tough part was yet to come, however. He knew that trading with the Dorgrid could be lethal, especially when the trade was a box of rubies for a Dorgrid Efficiency Amplifier.

But that was later. Saxon made it a rule never to worry about things out of his control. It saved the nerves. For now he was pleased. He was four rubies closer to The White Ones.

He checked the scanner, then glanced over at his passenger, a dog-like Shrifar, a quiet and incredibly pathetic-looking sentient. Saxon wondered how it could have come from a world as lovely as the one below them.

"I will be glad to be home," the Shrifar said softly through his translator.

Although the coincidence of their both just happening to be going to the same place had made Saxon suspicious, he had agreed to take the basset-like creature from Tau Ceti on to Shrifar. Saxon had suddenly, though not unexpectedly, found himself unwelcome among the Tauians, and the Shrifar had offered rubies for passage. How could he have resisted? And now Tau Ceti was one other place Saxon would have to avoid in the future.

He had to chuckle again about that. Twenty-seven members of the royal family there had walked right into the room where he had set up one of his Quinlan Wave Generators. All at once they began talking with their gods and attempting to copulate with each other. It had all been the brainstorm of one of the princes who was in the line of succession, and he had paid Saxon six rubies for the use of his equipment.

That brought to twenty-six the number of systems he now had to avoid. And it also brought to seventy-four the number of .5 kilogram rubies in his possession.

Carefully Saxon calibrated the ship's descent.

"How long till I can stand on my earth?" the Shrifar asked.

"About four minutes," he answered. "You have any soma on Shrifar? I could use a tall glass."

"No soma." A kind of breathy laugh came through the translator. "I have heard of your thirst for soma, how you drink it instead of water."

"You can't trust alien water," he said, not wanting to harm his reputation.

"It would please me," the fleshy dog-like thing said, "if you would stay with my family so we could repay your kindness with kindness."

The ship delicately touched down as the hum of the anti-gravs faded. Saxon unhooked the Shrifar.

"That is gracious," he said, "but the rubies will suffice."

The port opened and the sweet air of Shrifar wafted in. It was a planet of perpetual spring. The sentients here worshipped their earth and considered themselves to be only temporary residents on their god's body. As a consequence, the planet was a garden, immaculately trimmed, green as an emerald, and the outdoors lacked the noise of even the smallest machine. Saxon had seen holos of the place, but now the smell, the greenness...

"The rubies are sufficient payment," he said, "but the beauty of your planet has made me reconsider your offer. If I am welcome, I will stay long enough to have my ship's systems checked."

The Shrifar bowed in assent. "Perhaps, Honorable Saxon, we might arrange for an immediate transport of soma."

Saxon would have thought it impossible, but he thought he saw a trace of humor in this sentient's sagging eyelids.

FROM THE terrace of the Shrifar's home, Saxon could see the planet's single ocean. As the soma warmed his brain, the ocean seemed to become the shining eye of the planet's god. He was used to such sights. They were unreal and he knew it, but the soma dulled the nagging questions that forever seemed to pester him. After another drink of the white liquid, the planet seemed to become aware of him sitting on its skin.

"You are quiet when you drink soma," the Shrifar said softly. "I have heard that many who drink it shout meaningless statements and damage themselves."

At a certain point in his drinking, the hallucinations seemed to back off, taking with them all the cobwebs, all the cares and questions, leaving Saxon clearly aware of who he was and where he wanted to go.

"I'm saving all the crazy stuff for later," he finally answered.

"Are you going to Dorgrid, after you leave us?" the Shrifar asked.

If Saxon hadn't guarded himself, he would have started with surprise.

From the time the sentient had asked him for passage home to his planet, he had been telling himself to pay attention, to keep the antennae out — something was up. And now, here it came. The Shrifar's only enemy, the ones determined to possess this planet and all its minerals, was the Dorgrid. And there was no way that the Shrifar could have known where Saxon was bound.

"The Dorgrid have something I wish to purchase."

A long silence intervened. Under the enormous fern trees around the residence, the Shrifar's children played. They had fashioned airplanes from the broad leaves of certain bushes and were throwing them into the sky.

"I am not political," Saxon said. "That is the only way I can travel freely. I must remain without politics."

The sentient's eyes drooped even more sadly.

Saxon understood his grief. His Shrifar host was an ambassador of sorts and had been on Tau Ceti to beg their assistance. He had heard that the Tauians had confiscated his ship by way of their response. And the Dorgrids. The Dorgrid Empire, as they called themselves, though they occupied only one world, was as different from the Shrifar as imaginable. They were a hard race, humanoid, hairless, and utterly without humor. Theirs was a society of technicians, insect-minded technicians who lacked the smallest trace of imagination — so they stole the ideas for their technology from all over the galaxy. If warp drive worked over the vast spaces between galaxies, they would have stolen from the entire universe. And had they heard of Hitler, they would have worshipped him as well as electricity.

In the distance now, the Shrifar youngsters bounded around the towering ferns. The host shouted at them and they moved closer to the house, never interrupting their play.

"There will be war, of course," the Shrifar said to Saxon. "The Dorgrid will defeat us."

Saxon took another deep drink of soma and wished for numbness. Instead, in some space behind his eyes, he saw the levelling of the planet, the mining, the plundering such as the Dorgrid had done to their own world. And the Shrifar themselves . . .

The Shrifar host poured himself a small glass of soma and held it gingerly in his paw-like hands.

Saxon wondered if he would really drink it, since this race was known to never alter its consciousness.

He sipped it through his thick dark lips. "With luck, Honorable Saxon, the war will be over quickly. As you know, we do not fight. We have nothing to fight with." He looked up at Saxon, his mood visibly becoming lighter. "That was interesting, what you did to the royal family on Tau Ceti. I found their dignity superficial and self-serving. Though I did not see, the rumor was that . . ." He broke into a short barking laugh. ". . . that the royal family copulated itself."

Saxon had never heard Shrifar laughter before. It sounded like an asthmatic St. Bernard.

"After dealing with the Tauians as temporary ambassador, that is what I wished them to do to themselves. How did you effect it?"

"It's something I traded for about a month ago: a Quinlan Wave Generator. You program it to broadcast whatever emotions or words you want, then you tune it to the frequency of the particular brain type you want to receive it. I set it up, tune it, and you sense whatever I program into it. Basically, it's a transmitter where the sentient is the receiver. The Tauian royalty thought their gods were making them

want to love their brothers. And sisters."

The Shrifar wheezed his laughter again, then sipped at his small glass of soma. Again they sat in silence on the terrace of the house in the tall forest. Except for the distant call of a strange bird and the barking of the children, the world seemed utterly silent.

"The rubies I gave you for passage . . ."

Saxon knew what was coming. It was something he had avoided thinking for half a day now.

" . . . you will trade them to the Dorgrid?"

Saxon did not answer. He was not used to feeling like an insect, but he did now. A very low insect.

"It is only academic curiosity," the Shrifar said. "Four rubies more or less for their lasers will change the outcome of nothing."

Saxon shrunk in his chair. He wondered if his ultimate plan, getting to The White Ones, was worth dealing with the Dorgrid. Would the very rubies handed to him that afternoon be used to cut down and incinerate the Shrifar children he watched playing?

"My information, Honorable Saxon, is that you have numerous kilos of rubies which you will be trading. Again, that will likely alter nothing. But what is it that they have that you wish so badly to have?"

Why not talk, Saxon wondered. The Shrifar seemed very well informed about him — they probably knew the answer anyway.

"It's the Dorgrid Efficiency Amplifier," he finally said.

"The existence of it is only a rumor."

"A solid rumor. Worth checking out."

"And you think they will trade one for thirty-seven kilos of rubies?"

Saxon was not wrong in his assumption: for all their simple-minded appearance and their basset-like looks, the Shrifar was to be taken seriously. He had thought that only he himself knew the quantity of his cache.

"I was hoping to trade for two — and then steal as many others as I could get my hands on. I am not overly fond of their race."

His host seemed to smile. Stealing from his enemy obviously appealed to him. Or perhaps the soma had tickled a few nerve endings.

"Why do you want their machine? If such a thing exists, they will use it to help their weapons kill us — but how will you use it? Have you enemies?"

Again, though Saxon had told no one, he suspected the Shrifar knew the answer. So was this a test? A test to find out how truthful he was or how far he could be trusted? The possibility seemed too remote.

"No enemies," Saxon said. "As you probably know, warp drive doesn't work between galaxies for several reasons — mainly power requirements and the scarcity of available gravitons in the void. With the Dorgrid Efficiency Amp, if it exists, coupled with a Star Mark VII Warp Drive, I've figured a person could easily travel from galaxy to

galaxy."

The Shrifar nodded and sipped the white liquid. Saxon wondered if the sentient could still understand his words or if the nod was from mere politeness.

"However, intergalactic travel . . . is not my real interest." Saxon hesitated. Should he tell it? He was so close, now, to the Efficiency Amp. The slightest miscalculation could be fatal to his entire nine-year plan.

"Are you interested, perhaps, in The White Ones?" the Shrifar suggested, his voice, even through the translator, a bit unstable.

So he did know. Saxon now had cause for uneasiness, but the cat was out of its bag — so why deny it?

"That's right. You too have heard of The White Ones. Again, it is another rumor. Occasionally, when a ship's warp drive malfunctions due to overcharging with gravitons, the passengers come back with tales of The White Ones. They speak of disembodied consciousnesses; less-than-nothings that are there; infinitely intelligent non-existences. Whatever they are, I want to see them or experience them. I have a question or two I want to put to them. So, depending on how many I get, I'm going to put two or three or four Efficiency Amps in tandem on the warp drive. That should get me to them."

The Shrifar stared at Saxon. Evidently the idea of the Efficiency Amps in tandem was something he did not suspect.

"Do you understand what you're doing or what will happen?"

"Honored Host, at that point, when I engage the warp drive, I may encounter The White Ones, but on the other hand, I wouldn't be surprised if I became your new evening star."

The stare softened and the Shrifar nodded, his eyes refocusing on his children in the distance. "Soma," he said, just before clicking off the translator, "soma might help the Shrifar accept its death with a little grace."

He rose to his doglike feet and walked unevenly into his home, leaving Saxon alone to watch the children tossing their leaf-planes into the air and hear them laughing, laughing as children everywhere seem to laugh, their race notwithstanding. Their lives, or deaths, notwithstanding.

Saxon picked up the pitcher of soma and poured it down his throat. If he found The White Ones, he planned to ask them why, at such times as this, life was at once so lovely and so hateful.

HE DREAMED of a puzzle with four pieces: the Dorgrid Amplifier, the rubies, the Quinlan Wave Generator, and the quiet Shrifar. The parts wove an intricate pattern around each other. They came closer, moved more slowly, and as with most puzzles, the pieces suddenly fit together in a quiet flash of inspiration, providing the most obvious and

unexpected solution.

When he awakened, had the soma not been in his system, Saxon would have assumed he had finally gone mad. Every surface in his sleeping quarters was littered with fist-sized rubies. The air glowed blood red.

He assumed they were hallucinations until he reached toward one and his fingertips bumped it off the bedside table. He jerked himself upright — and then, only then, did he see a Shrifar standing at the foot of his cot. This was not his host. This one was bigger than any of the race he had seen so far. His fur was speckled black and orange, and his eyes seemed old, ancient even, and infinitely weary.

"Honored Guest," he said through his translator, "we offer these to you as both a gift and a bribe."

Saxon could feel his blood pressure coming back to a more normal level. Even through the haze in his brain, he realized that the coincidences of the last few days, the Shrifar's unexpected knowledge of his intentions, had a design. And the design was beginning to make some kind of sense.

"We give you these stones. As they are here, they are without value to us because they are so common in our world. But if they are traded well, they could mean a great deal to us. You see, we want you to have all the Dorgrid Efficiency Amplifiers you want."

That was it all right. Saxon was pleased that he could put two and two together so early in the morning. "And you have specific plans for one of the amps, don't you, Honored Shrifar?"

"That is correct."

Saxon felt himself smile, though he knew the greatest risk of his life — the risk the Shrifar depended on for their survival — would be on top of him before the day was finished.

"Honored Shrifar, I have only one question at this point: have you been picking my brain, or did you put this plan there in the first place?"

The ancient eyes almost twinkled. "We are a simple race. Surely it is unlikely that we could do either."

"And surely, Honored Shrifar, it is impossible that your simple race would speak untruths."

He said, "Well . . ." and broke into a loud wheezing laugh.

The rubies were packed in special crates designed to look as much like meteors as possible. Four hundred and thirty-seven kilos of perfect red stone. If the Dorgrid Amplifiers existed, and if the trade was made successfully, the Shrifar might survive and Saxon might end up with a couple of the amps for his warp drive. As he watched the ruby-filled "meteors" being loaded on his ship, he reminded himself that this was probably the nineteenth or twentieth time he had depended on his luck for survival. How many lives could he have left?

But he was still here and only two steps away from attempting some

kind of encounter with The White Ones.

Forty or fifty Shrifar gathered to see him off. He was their only weapon against the Dorgrid and they prayed a moment before letting him leave. As a final blessing, they gave him a handful of their earth, the greatest gift they could confer on anyone. Then the hatch closed Saxon inside his ship, away from the peaceful planet.

Once again, he was on his own.

IN THREE hours, after randomly dropping the disguised rubies along the way and memorizing the coordinates, Saxon's instruments reported that Dorgrid tractor beams were pulling him into their planet. He expected as much. But he would not land. For the plan to provide him with any safety at all, it was necessary that his ship remain in a parking orbit and that he be transported down.

He changed into a robe that the Dorgrid would hopefully think belonged to a holy man, strapped the Quinlan Wave Generator to the inside of his thigh and around his neck fashioned a necklace of the Generator's programming discs; their colors identified them: one for panic, one for confusion, another for drowsiness, and a yellow one, already in the Generator, recorded so that a voice would ring out in the Dorgrid minds, telling them to disarm themselves in the face of a holy person.

Saxon took a deep breath and prepared himself for the encounter. He hoped that with a shambling gait, his well-worn robe, and the necklace, he would pass for about one-third mad.

"I AM Dorgun, Second Chief Technician of the world of Electricity," he said without a translator. "Identify yourself and state your business here." Dorgun and his associates stood rigid, as though made of stone. In fact, their flesh seemed hard-edged, as if it had literally been chiseled.

"I am Nezz Angle, priest of The White Ones, come to trade."

"Your White Ones do not exist, so you are misled. What do you have to trade?"

Saxon was prepared for brusqueness, and Dorgun had apparently had much practice. He didn't want things to go this fast, so he tried to slow them down: "May I rest a moment?"

"Denied. What have you to trade?" The words were no more than out of his mouth when an underling approached, bowed, then whispered in Dorgun's ear. "You need not answer my question," Dorgun said haughtily. "Your ship has shown that you have nothing on board of any value to us. Prepare yourself for disposal."

This was getting rapidly out of hand. Saxon considered activating the Generator. "Dorgun," he said, "I am no fool. What I have I would not be so careless as to bring with me. May we speak alone, the two of us?"

"Denied. What have you to trade?"

The Shrifar had been right: the Dorgrid hardly qualified for being called "sentient."

"Rubies."

That did it. The chisled features twitched and the eyes blinked. At least they feel greed, Saxon thought. Perhaps that would be enough. He played one of his aces:

"Four hundred thirty-seven kilos, nine hundred and ten pieces."

Dorgun gasped; it was faint, but it was a gasp.

"Two hundred twenty-two pieces of one kilo or better, and if I am tortured for information regarding their whereabouts, I have been programmed to die immediately."

Apparently without signal, the underlings marched through the doors which then closed with a soft hiss of escaping air.

"If you lie to the Dorgrid, we will burn out your nervous system."

"My figures are correct."

"You may sit, Nezz Angle. What is it you want from us? Would you care for soma?"



He would have loved it, but this was not the time.

"As a priest, soma is forbidden to me. But please yourself."

"Dorgids loathe soma and those who drink it. What is it you want from us?"

Now came the hard part. "Honorable Technician, I have heard of the genius of the Dorgrid race. I have heard that the Dorgrid has created a machine, an amplifier which geometrically increases the output of virtually any power system far beyond what could reasonably be expected of it. It has been called the Dorgrid Efficiency Amplifier."

Dorgun's face went as hard and dark as stone. "Such a machine does not exist. It is a lie."

Saxon suspected that Dorgun protested too much.

"Honorable Technician, my destiny is with The White Ones. My concern is not with sentiments. I have come here only because you have machines I need, not so I can reveal your secrets elsewhere. I will submit to truth detection procedures on that point."

"You still assume the Amplifiers exist," he said without emotion. "I have told you they do not, and they don't."

"Honorable Technician, will you submit to truth detection on that point?"

Before the anger could boil over on him, Saxon quickly added, "And I do, of course, have over nine hundred rubies to trade, all of laser quality."

Dorgun seemed to sink into himself with thought. "I must first see the rubies," he finally said, "That, before anything else."

"Honorable Technician, The White Ones have instructed me thus: you produce one Amplifier, then I produce fifty kilos of rubies. I transport . . ."

Dorgun rose from his chair. Saxon prepared himself for a blow to his face — but it did not come. Again he considered activating the Generator, but that would mean an end to his stay on Dorgrid and, at this point, any chance of trade. Dorgun had turned white with rage. Suddenly he spun and rammed his fist through the small table. It showered across the room in a spray of plastic shards. When he did speak, his voice was barely contained:

"You do not dictate to the Dorgrid! You do not make insulting offers. Your White Ones do not exist and you are moments away from disposal. You are speaking to the divine Dorgrid race, the race destined to rule the galaxy with our technical genius and our sacred Electricity. You are filth as the Shrifar are filth as are all the sub-species in the galaxy. The Dorgrid," he concluded, seeming now to have burned off the most vicious part of his anger, "represent the only purity in the galaxy."

Saxon felt disgust fill his soul to overflowing. "Honorable Purity," he

said with a quaver in his voice, "I have rubies for trade. I am only allowed to trade for your Efficiency Amplifier. Such are the orders I have received."

Dorgun's eyes slitted and he moved toward Saxon with his knobbed fists poised at his sides like mallets.

"I remind you," Saxon added, one hand resting lightly on the device strapped to his inner thigh, "that I will die if I am tortured. If I die, the rubies, hundreds of kilos, will be lost forever."

Dorgun turned without warning and left.

Saxon breathed a sigh of relief and consciously forced his tensed muscles to relax. Until now he had not had time to observe the room in which he found himself. Aside from the splinters of plastic that littered the floor, there was only himself and the small chair on which he sat.

He assumed he was being watched, although there were no peepholes or mirrors or any other interruption in the surfaces of the walls. He had not been alone thirty seconds before the lights went out and he found himself in utter darkness.

Subtle torture, he thought. They wouldn't risk the use of physical pain — so they could try to worry him into giving them what they wanted to know.

When he stood up, his head hit the ceiling. Four blind steps to the right — a wall. It was then that he heard his chair slowly scraping across the floor. All doubt was removed from his mind. If this was only for fright, it worked.

Saxon did not enjoy the thought of being pressed to death in complete darkness.

If the Dorgrid had the Efficiency Amplifier, perhaps they didn't need what he offered. Perhaps Dorgun wasn't kidding when he said he thought all other races were filth. And perhaps Saxon was going to be pressed into a tidy little cube, picked up with tongs and dropped into the nearest waste converter. It did not appeal to him.

When one wall touched each elbow, he decided to call off the joke and activate the device on his thigh. It would probably end any chance of getting the Amplifiers, but at this point he had little faith in his future existence. Since the Generator was tuned to the Dorgrid brain, Saxon heard only a vague high-pitched chattering in his head.

The walls pressed his hips and shoulders from the sides, and now he was bent double from the descending ceiling.

He hit the button again and again, wondering if he had inserted the wrong disc.

The pain of his chin driving into his chest would have made him cry out, but he could no longer open his jaw. Even the blood in his veins seemed under extreme pressure and near bursting.

Then, though the pressure did not ease, it seemed not to increase for a moment.

Open up the walls! he screamed inside his head. Open them up! One side of the box he had been pressed into simply fell away. One of Dorgun's lieutenants gently pulled him out.

When Saxon unknicked his body, he saw something that nearly made him laugh: Dorgun was absent, but his entire entourage knelt on one knee in a semicircle, all facing Saxon, their hands held out and crossed in an attitude of reverence.

He decided to play his cards hard and fast. This was not a place where he cared to spend any extra time.

"Bring in Dorgun."

The lieutenant did a quick genuflection and rushed out.

Dorgun entered a moment later, his sharp features white with some emotion between anger and fear. "You did not die under torture," he said contemptuously.

"I am neither a fool nor without defense, so do not press your luck, Dorgun. Your racism has deluded you into believing you are more powerful than you actually are: And here I am, offering you a trade of power for power, where we both profit. Do not try to prove yourself a greater fool than you have already by refusing this chance."

His face was as craggy and unrelenting as ever. He was a Dorgrid leader, the homo sapiens' equivalent of a psychopath; one sign of weakness and Dorgun would go for the throat. Saxon knew that any mistake he made now would be fatal — instantly fatal. Around him, still awed by the voices in their minds, the underlings held their position of respect.

"Dorgun: the trade is offered you this one last time. Eight Amplifiers for four hundred kilos of rubies. For you personally, the remaining thirty-seven. Give your answer."

He hesitated. "We do not have eight Amplifiers. There are only . . ."

"How many, Dorgun?"

"Six," he finally spat out, obviously loathing himself for submitting to the will of one he considered to be filth.

"I am generous, Dorgun. Give me four of your machines. Surely you can build more. But you cannot build more rubies."

"Four . . ." He seemed to choke on the word.

"Take me to your transporter room and have the Amps there within the hour." Saxon figured that since he had begun giving orders, he would go all the way. "Each Amplifier is to be fitted for attachment to a Star Warp Drive, Mark VII. If you give me dead machines, Dorgun, I will see to it that The White Ones incinerate your world."

Dorgun's face twisted like a man's whose arm is in a hammerlock. Without response, he exited.

As Saxon was escorted to the transporter room, he casually brushed his hand across his thigh several times. Each time he decreased the

volume of the output. He wanted the full shock of the broadcast to have its desired effect in the event he had to use it again.

For the next hour he feigned relaxation in the transporter room as the Dorgrid soldiers brought in the four Efficiency Amps. They were small, the size of a man's head, and appeared to be utterly solid. Attached were a six-lead cable and a cable that terminated in a calibrated dial. Terribly simple-looking.

Dorgun appeared and his assistant quickly explained to Saxon which lead should be attached where. After the hookup, he explained, one had only to turn the control to whatever degree of efficiency his equipment could handle — anything up to 1000% efficiency.

"One final thing," Dorgun said, breaking his long silence and stepping stiffly forward. "The exchange operates on our terms: you transport the rubies in, then we transport the Amplifiers out. Payment comes in separately for each machine, and each machine goes out separately."

Saxon did not even need to figure the scheme behind that one: When Dorgun saw the final hundred rubies materializing in the transporter, Saxon would be shoved head-first into the nearest disposer. It would then be scored as follows: Dorgrid gain: 400 rubies; Dorgrid loss: three Amps (perhaps retrievable). Saxon's gain: three Amps, which would be rendered useless because of Saxon's loss: his life. But there was a possibility of success . . .

"Your terms are acceptable," he said. "Allow me to enter the coordinates of the first one hundred kilos."

The Dorgrid had no respect for emotion, but they had even less respect for lack of power, so when the meteor shell was broken off the first cache and they visualized the lasers they could then build, they acted like drunken paranoids, casting secret grins here and there, watching the whole time that they did not become noticeably overjoyed. As they stared at the glowing red stones, Saxon casually slipped one disc out of his Wave Generator and inserted another.

Dorgun himself put the first Amp on the transporter stage. Again, Saxon operated the coordinates and sent it onboard his orbiting ship.

The second hundred kilos arrived and the second Amplifier was transported out. The third hundred kilos blurred and took solid shape, and Dorgun set the third Amp on the platform. Saxon set the ship's coordinates and then activated the auto timer on the control panel for forty-five seconds. He casually announced to Dorgun that this Amp did not look quite the same as the others. "I wish to take only a moment to inspect it. It is probably nothing."

Dorgun went rigid with indignation. Not to be trusted by an inferior sentient was almost more than he could bear.

"Thirty seconds," Saxon thought. He hit the button of the Wave



Generator and watched the havoc break out across every part of the room. The confusion program worked well. Even Dorgun acted as though he had been hit in the chest. Around the room, the Dorgrid eyes went blank and their faces lost every emotion except the fear of the confusion in their own minds.

"Ten seconds," Saxon counted. He moved quickly, dodging the stumbling Dorgrid, got to the platform and stood and stood over the amp. "Five . . . four . . ."

Dorgun lunged toward him. Saxon could see his bitter face twisting in raging anguish as he fought the conflicting emotions in his mind. The world must have seemed horribly distorted, every direction fouled in a tangle of confusion, yet Dorgun drove himself like a blind force of nature, dove at Saxon, and even had got one hand on him when Saxon's image blurred, flickered, and disappeared.

When his vision cleared, Saxon saw arranged beside him the two

Amps, and under him, the third. Still clinging to his torn robe was Dorgun's twisted fist. From where the elbow was once, purple blood drooled down onto the deck.

Saxon twisted it loose, and, in utter disgust, disposed of it.

THE WIRING the Dorgrid had provided for the Efficiency Amp needed only the slightest modification for Saxon to hook it up to the Quinlan Wave Generator. This was the final leg of the plan that had come to him while on Shrifar. In only a few minutes he was finished with the connection and was putting the program disc in place.

By orbiting this contraption, the Generator and the Amplifier together, half the planet at any given time would be flooded with fear and loathing for machinery of any type. In ten years their technology would be back in the Stone Age . . . unless the Generator burned out . . . or was hit by a meteor . . . or a hundred things happened. Or unless Dorgun or another like him was strong enough to resist and manage to get to the orbiter and dismantle it.

Saxon had never believed he would get this far in the execution of the plan, so he had never really considered the loopholes. And he knew enough about machinery to know that only a fool would trust his perpetual safety to a machine.

He couldn't hang in his present orbit long or the Dorgrid could be on him like insects. Something had to be done quickly — some solution without flaw.

And the solution was so simple. It struck him numb. As though it had been hanging on the air, just waiting for him to ask for it, the idea descended on him like a cloud of gloom. The solution was indeed flawless. The Dorgrid would never threaten the Shrifar again.

Saxon punched the program he wanted into the computer and the small disc appeared in the "Completed" slot. This he inserted in the Generator, turned the Dorgrid Amp to maximum and switched it on.

A minute later it had been eased out the port and now freely orbited the planet, bathing it in Saxon's new program.

He did not want to think of the planet's surface.

Using the slower ion drive, for there was no need to hurry now, he moved away from their planet.

THE DORGRID technicians had been working smoothly at their posts, tracking the alien's orbiting ship and arming the unmanned interceptors. Suddenly it dawned on each and every one of them just how dangerous the Dorgrid next to him was. Heads snapped from side to side and their slitted eyes bulged in fear and violent contempt.

Everyone of them feared for his life and felt utter hatred for the monstrously evil beings he saw himself surrounded by. Arms lashed out. Whatever could be used as a bludgeon was used. Someone tripped the transporter switches and as the struggling Dorgrid fell through its invisible beams, their bodies were sheared into pieces and shot to every part of the planet. Friends clubbed each other without mercy. Faces were torn, jaws ripped from their faces, and before the sun set, blood covered the planet.

The wounded Dorgun lay back and felt his life gradually loosen its hold on him. He felt the waves of hatred and he saw the butchery it caused. Dorgun knew the source, and in his last moment of life, he hated his own kind as well as the man who was killing the Dorgrid race.

EVERYTHING WAS finally ready, and Saxon could hardly believe it. Nine years ago he had decided to go after The White Ones, find out who they were, what they were, or whatever was possible. He had bribed, swindled, lied, cheated thieves, and now he had killed . . . The word was too weak, he decided. He had just exterminated a race. He had played God, and though he thought he had done a good imitation, it did not leave a good feeling in his stomach.

When he thought of the Shrifar, their green planet, the air, their children . . . when he thought of all that, he knew that regardless of how he felt now, he would do it again.

He stepped back and looked at his prizes. The remaining two Dorgrid Amplifiers were hooked one onto the other, and then onto the Mark VII Star Warp Drive. At the junction between the Amplifiers and the drive he had hooked in another Quinlan Wave Generator so it too would get the tremendous power boost. However, rather than pre-program the Quinlan with a disc, he had rigged it in such a way that he himself would provide the program source.

Now, he hoped, not only would the warp drive carry him far beyond the visible galaxies, but whatever capabilities his brain had for making contact with The White Ones would be incredibly amplified.

But then, he thought, most of this was guesswork. As he had said to the Shrifar, he and his entire ship could convert to energy. For a split second, he would be a breathtaking sight.

He webbed himself in and readied the controls. "Control," he thought with irony. When the final switch was tripped, he'd have about as much control over his destiny as the Dorgrid in their death frenzy.

Nothing was really known about The White Ones except that they were there, lurking between the galaxies — or perhaps beyond the galaxies, and they were probably an intelligent form of the highest level.

He wanted to ask them questions; he wanted reasons for the existence of races such as the Dorgrid; reasons for the sickness of existence that he had seen blot out whole races when their will to live simply evaporated. He wanted to know where the Universe was, where it came from, and if there was an ultimate Plan.

The computer signalled a green "Ready." Saxon took one deep breath and hit it. There was a quiet thud and all the lights came on.

EVERYTHING WAS without color and without darkness. A colorless light, a "whiteness" filled everything. He could see, but there was nothing to see, not even when he tried to see himself.

He started to think, "Where am . . ." but the thought skittered away like a fading dream. Soft, smooth peacefulness filled him, although he knew he no longer "was."

He started to wonder where The White Ones were, and that thought, too, vanished like smoke.

In an avalanche of surprise, it became unavoidably clear that he was one of The White Ones, that there were others and they were everywhere. The questions he wanted to ask did not seem important. There was something larger here. Communication with the Others was irrelevant: each of Them knew everything, including what the Others knew. Knowing that They were — that was enough; fully enough.

As his burning white form raced away from all other things, racing in a warp that shredded the fabric of space, he knew, with a little sadness, that he had searched so long and worked so hard to find what he had had all along: himself.

The universe around him blazed. ●

Did you enjoy reading this issue of AMAZING? If you did, we want you to know that we will try harder with future issues to please you even more! We love working on AMAZING and want to make it a magazine that pleases you — that takes your fantasy to the beyond and back . . .

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THE MACROPHAGE CONNECTION



by A. J. Thomas

One of science's more potentially dangerous projects in recent years has been the genetic experimentation conducted with viruses on *E. coli* bacteria. This controversial recombinant DNA research posed the threat of possibly letting loose on the world a lethal, mutant strain of virus, unwittingly created in the laboratory. The following account, "leaked" to us by

an anonymous source, concerns the experimental cultivation of a giant virus (macrophage) in a test tube.

The implications of worldwide consequences are similar to those raised by the detractors of recombinant DNA research projects. We hope someone in a position to crack the cover-up will see this in time.

Illustrated by Elinor Mavor

Colin C. Dahlquist Institute of Immunology
Maidenberg University
Willseyville, NY 13864

Dear Mr. Bernhard:

Enclosed is a letter which I found while sifting through the rubble of the immunology lab, here at the University. Poor Jerry. His letter, with its deadly warning, never reached its destination. I was on vacation when this debacle occurred and have not been able to get a coherent explanation from any of the survivors. Security is at a maximum and all are afraid to talk. The contents of the letter are so outrageous that it would be well nigh impossible to present it as fact to the scientific community. Thus, I have sent it to your magazine in hopes of publication. Whereas most readers will take it as a story and nothing more, the proper authorities may hear of it and so be warned and notified.

Thank you for your anticipated attention to my request.

Sincerely,
Alma Jo Williams

P.S. I am requesting that you change certain names. No sense in alarming the general public!

From: Dr. Jeremy Flinders
Colin C. Dahlquist Institute of Immunology
Maidenberg University
Willseyville, NY 13864

To: Dr. Steven Persson
Chairman
Department of Biochemistry
Midland Park College
Midland Park, NJ 07432

Dear Steve,

A thousand pardons for renegeing on the seminar at the last minute. However, I heard that Rosenblatt did a marvelous job, much better than I could have done, considering the circumstances. It was

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imperative that I remain at the lab, due to an unfortunate incident concerning one of my graduate students, of which you must not be aware.

Luckily, and I say this with grim irony, the campus police and our local gendarmes feel that his disappearance is due to intoxication and that his remains will be found at the bottom of one of the local ravines after the snow and ice melt. Sometimes the bodies of such unfortunate students are never found, or are found months later in the lake where the waters have carried them.

Such will not be the case with Cory Jenkins and I feel that I owe you both an explanation and a warning.

I'm sure you remember Cory. He was the sullen young man in the dirty lab coat who upset the AquaSol bottle, thus spilling the "hot" scintillation fluid on the laboratory floor at the time of the Institute Conference. To be sure, the microcurie count wasn't too high, but Janet Davies and Hugh Dykeman got it on their shoes and Radiation Safety insisted on taking those as well. Good thing Janet has that great sense of humor. She borrowed a pair of clean rubber unit boots (size 12's mind you, and she must wear a size 3 shoe if even that) and actually wore them while giving her presentation, after a few appropriate remarks about "hot feet."

Although Cory showed traces of genius, his appearance and behavior belied it. We all tried to overlook his secretive behavior and his antisocialness, because his research really showed promise. He is one of the few students I have ever had who had actually done a conscientious, thorough literature review before beginning his research, instead of *during* and *while* writing his thesis. His style of writing was clear and concise. Every experiment which he intended to perform was written up in advance, designating how much of various reagents, tissue culture fluid, animals and glassware would be needed and what he expected to find, and why.

Of course, we all know that experimental procedures have a tendency to be unpredictable, but Cory never took that into consideration, thereby causing himself needless frustration, and ultimately costing him his life.

His work concerned the effects of different agents on lymphocyte transformations and macrophage chemotaxis. As you well know, certain agents such as Concanaline A and phytohemagglutinin will stimulate lymphocytes to begin mitosis. This is measured by the uptake of H^3 -thymidine into the cell and subsequent counting thereof in the liquid scintillation counter. This went well. The macrophage portion of his research gave him setbacks, but he managed to work them through. We thought everything was well and that this would be an uneventful if stimulating bit of degree work. We were wrong!

Cory got his hands on an abstract of a paper from some obscure journal, concerning the growth and maintenance of macrophages in tissue culture. This in itself was unusual, because although macrophages can be kept viable for several weeks in the appropriate media, they normally do not divide. Oh, there are specialized techniques such as hybridization of macrophage with tissue culture cell lines through the judicious use of certain viruses and the use of cloning techniques which will produce a sheet of cells. These cells will not respond to chemotactic stimulation nor will they become phagocytic.

Well, Cory became obsessed with this problem. Since the techniques for his main research project were now quite routine, he induced Carl, my technician, to work on them, just giving him the instructions as to what was to be added, etc., while he pursued the wily macrophage into tissue culture.

I will not recount the frustration and anger and short-tempered retorts that have filled the lab these past few months. Everyone suffered. The glassware was not clean enough, the chemicals not pure enough, the CO₂ incubator didn't have the proper mixture of gases, the temperatures fluctuated too much, etc., etc. He not only enraged Carl, who is very long-suffering, but estranged his fellow graduate students, and alienated all of the other maintenance people. He swore at the animal technicians, snapped at the other faculty members and even became short-tempered with the director. Frankly, I was surprised that Krastner took it, but I think he felt that if Cory could pull this macrophage thing off, it would bring honor and glory to the Institute and a plethora of grants from NIH.

Then about a month ago, Cory calmed down. I asked him how things were going and he said, "O.K." He mentioned a new chemical, thiotimoline, I believe, that he had gotten from some firm called ASMOF. Well, he mumbles like you wouldn't believe, anyway, so I think that is what he said. I'd never heard of the company, probably one of those obscure places that specializes in esoterica. He said that this stuff, thiotimoline, somehow activated the macrophages to form a giant multinucleated cell in vitro, and the resulting giant cell behaved in vitro the same way it behaved in vivo; i.e. responding to chemotactic stimulation and phagocytizing foreign bodies. He said that there was evidence that the cells would even divide in vitro, but hadn't been able to check this out yet.

He scrounged up some of those old, large Pavinski bottles from our store room, because he said that the Roux bottles were not big enough. These are like the Roux, but are much larger, and have square shoulders on them instead of the rounded shoulders of the Roux. These particular bottles use at least 500 ml of media, so you know that

they are good size.

This last episode was around Thanksgiving. Reagan and I went to the Chicago meeting where I fully expected to see you. I was given the dual news that one of your cows objected to having her corpus luteum removed and did a number on your front teeth, and also that I was expected to speak before your group after the holidays.

When I returned, all seemed well and Cory was immersed in the cultivation of the giant cells. At first he used filter papers dipped in various solutions which were then inserted into the bottles and the rapidity of motion to or avoidance of it was measured. He spent hours with ruler and stopwatch, measuring and timing the responses of his pets.

Then he tried bits of tissue with the appropriate chemicals and the giant cells seemed to like these even better. Some of the technicians would lay small bets on the various bottles and finally some wag got around to naming them. Facetious warnings were posted concerning the fact that off-track betting was not yet legal in this county. It was Christmas time, and Cory's success seemed to fit in with the general joy of the season. Even Krastner deigned to enter the lab to see what Cory had wrought. He grimaced when he saw the labeled bottles: *Speedy*, *Invictus*, *Destroyer*, *Uncle Duke* and *Cora Belle*, and then congratulated Cory, who bestowed one of his rare smiles upon us. He then put the macrophages through their paces. Krastner grew more and more expansive and was positively beaming when he left the lab. He even invited Larry and myself down for a bit of Christmas cheer.

Well, the University was generous and gave an extra day off so after the Christmas Party, everyone headed home. Madge and I spent a quiet Christmas as all three kids were laid up with strep throats (which kept the relatives away in droves).

I guess it was just as well that I was the one who found the mess, and not one of the other students. The building guards were used to the lab lights being on all night, and they rarely looked in the door, as we are the last rooms at the end of the corridor. Cory had no car and was too cheap to buy a secondhand bike, so there was no sign that anything was amiss. He lived alone, apparently had no friends here to speak of and the rest of the occupants of his building had left for the holidays, so no one noticed beforehand that he was missing.

It was two days after Christmas when I went to my office, early in the morning. I wouldn't have even done that except that I needed to get things prepared for my talk. When I opened the fire door to our corridor, I noticed a faint aroma, like overaged tissue cultures, which grew stronger as I walked towards the lab. The lab door was ajar so I thought to get to my office through the lab instead of using my key to open up the door. The odor was very strong by then, and I immediately

thought of the Pavinski bottles.

Cory probably went home and left them sitting out on the counter instead of putting them back in the CO₂ incubator. God, would he be furious when he returned to find his pets nothing but a sheet of decomposing slime! So I thought as I pushed on the half-opened door and strode in, automatically turning to the left and entering the doorway to my office. It wasn't until I turned my head to the right to look at the bulletin board on the wall that I saw something on the floor with my peripheral vision. I turned and looked — and was glad that I had not eaten breakfast!

There was not much left of Cory, except for his skeleton and his clothes. What remained lay in a puddle of decomposing fluids and liquefying tissue. He was covered with a semi-transparent film. The resemblance to an amniotic sac was uncanny. I began to walk over to the remains when the crunch of glass under my feet became audible. I looked at the floor and saw the remains of some of the bottles. Two of them, uncorked, were still on the lab bench, a dry grayish film surrounding them. The remains of the other three bottles were all over the floor. The stench of rotting flesh assailed my nostrils.

I panicked and ran. It is hard for me to admit this, but it is true. My mad flight was stopped only by the back side entrance, which was locked. I leaned against the door and tried to compose myself. The fact that the door was locked meant that the animal caretakers had not come in yet. Thus I was alone in the building — no, *not quite* alone! What was I to do!

The rest is a merciful blur. Eventually, I got Krastner to come in. God, I've never seen the man so shaken.

The decision of final disposal was reached after much soul-searching. After the public uproar over the DNA-recombinant research (which resulted in the Molecular Biology wing being stormed and sacked) we felt that total secrecy was in order. The pity and horror of that scene was that the proposals were still on paper. No research had even been implemented yet! It boggles the imagination as to what might occur if the public found a *real example* of "science gone astray."

We finally decided to put the remains in the incinerator, thus destroying all contamination. No one saw us do this thing. There should be no problem of identification as the pit was half full of other experimental specimens. We both cleaned and disinfected the laboratory.

Later, Krastner brought me into his office and revived me with a couple of shots of good brandy. We tried to reconstruct the tragedy from the evidence in the lab. It now appears that Cory had come back to the lab after the Christmas Party. I remember that he had been quite drunk at the time, but then everyone was a bit tipsy. He must have been

adding media or something to the bottles, as the bungs for the bottles were lined up neatly on the counter. The thiotimoline bottle was lying on the counter, as if it had spilt. He may have gotten some of that or the tissue culture media on himself and as usual wiped his hands on his clothes, in lieu of his lab coat. Then he probably slipped in the stuff on the floor, tried to grab for the counter and clumsily knocked some of the bottles on the floor. He must have hit his head and knocked himself out. The giant cells, "scenting" the media, or whatever, oozed out of the broken and intact bottles and that was the end. There was no struggling involved and he must have died of suffocation when the cell sheet flowed over his head.

After cleaning up, we searched his desk and drawers and found his lab note book. When you come, you can read it. I don't trust the mail.

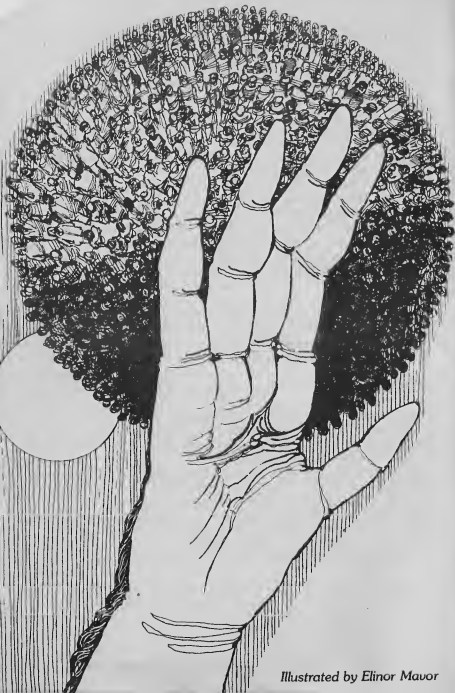
It was Krastner's idea for me to contact you concerning this matter, primarily because of our long close friendship and because of your influence on the scientific community. He felt that writing the whole episode on paper would act as a catharsis for my guilt. And I do feel very guilty! I should have paid more attention to what was happening. Because of many little things, we have lost a young man who might have made some meaningful contribution to society. By God, Krastner showed what he was made of, and I for one have found this seemingly cold man does have compassionate depths that none of us could have imagined. I will never forget this, regardless of what our professional relationship may bring in the future.

The main thing is that the catalyst for this action must have been the thiotimoline, as it is the only new reagent that was added to the regular media (according to Cory's notes). We searched all of our catalogs and over the past weeks have tried to locate the company, ASMOF, which is the outlet. The police were most cooperative and allowed us to go through Cory's personal effects, but to no avail. There is no record of where he sent for this stuff and we are not sure if the name of the company is correct. As I mentioned before, he had a tendency to mumble.

Steve, if you value the progress of science as much as the rest of us, please use your influence to help us track down ASMOF and wherever the source of thiotimoline may be found. That stuff can be very dangerous, especially in the wrong hands.

Hoping to see you soon.

In Haste,
Jeremy

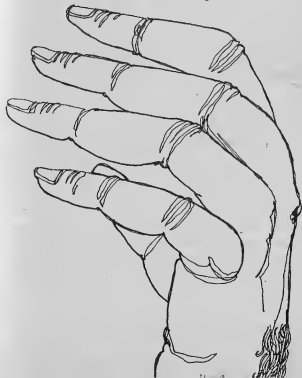


Illustrated by Elinor Mavor

We know what lengths lawyers must go to these days to win a case. This yarn speculates on the same kind of legal hijinks in a future time, in a most unusual courtroom. The stakes are very high, the tactics quite remarkable — and the motivation very, very familiar.

CLOSEST KIN

by Thomas A. Easton



A CHILL day under a yellow sun. A small, warm room in a pile of polished stone. An accomplished adversary. A neutral arbiter. And a case that could pay the rent and buy smoke, drink, and women for years to come. What more could a lawyer ask?

Well, he might ask that the case be his own, instead of the Imperium's, and that he and his adversary both be on salary. And he might ask that the stone pile be a more modern edifice, with the latest in laminar-flow climate control curtains that allowed members of different species to share a room in comfort. As it was, Askel, Hound of Justice to the Imperium, had to pant embarrassingly loudly to spill excess heat from his grey-furred body, while his opponent, Takit of the Imperial Revenue Service, visibly shivered in his fine-meshed scales. Only the Polarian judge seemed wholly at ease. But then what else could one expect of a backwater isolationist world? At least the streets outside were quiet.

"The case is simple," said Takit. His face, with its elongated suggestion of a snout, was aimed carefully midway between Askel and the judge. "There has been a death. Since the deceased had neither issue nor close kin, all his property and wealth go to the Imperium. So reads the Law." He didn't add that his job was to see that the Imperium got all it could. There were wars to fight and ships to build and payrolls to meet, always, and every jot and tittle helped.

Askel sighed. They had been over this ground before, many times. The death had happened nearly a decade ago. "I don't agree, Agent Takit. Granted, we have searched this whole sector for the deceased's issue. We have gone through all his books, his files, his records. We have torn his home apart, looking for clues. And we have found precious little."

"Because there is nothing to find."

"Or too much. We know he felt kinship with every living thing."

"As should we all. But nonsentients don't count, as you well know. Not even borderline sentients, such as this world has in its seas."

Askel rubbed his black button nose with a fingertip. It wasn't as cool as it should have been. He knew the heat of the room was bad for him. He wondered if he was coming down with a cold. A month before, it would have been a relief to take to his bed for a few days. To duck the haggling. But not now. Not when he was so nearly free to leave this world for good. "Of course, Agent Takit. I am not suggesting that we use the deceased's goods to establish a home for indigent cats. But we do have to take great care not to miss any possibility. The courts back home thrive on appeals. And not all the Imperium's lawyers wait for clients to come to them."

Takit shifted his gaze to stare directly at Askel's bare face. The pink skin shone against its frame of fur. It was smooth, unwrinkled, and for

all Takit's trained skill at reading the expressions of a hundred species, he could see nothing there. "Now look, Askel. I know your job. You were hired to protect the rights of widows and orphans . . ."

"To detect and prevent dishonesty of all kinds."

"So reads the Law. I know." Takit bared his small even teeth in a grimace. For all his scales and snout, he was an omnivore, as had been his ancestors for a million years. "But there aren't any widows or orphans here. There aren't even any distant cousins. There's nobody to inherit."

"He shared ancestors with every living thing on this world."

"We agreed there are limits."

"But there are precedents. Remember Grout's World. It had two sentient species."

"As unrelated as cats and fish. But sentient!"

"And I suppose that has to be the point. But tell me, Takit. What is your definition of sentient?"

"You're getting off the track, Askel." Takit tried to ignore the other's brief smile as a feint, but he was less certain than he wished to be. Was he off the track? Really? "But I don't mind answering. The deceased put a good deal of thought into it, and we've had plenty of experience with the question. It's not tool-using alone, and it's not speech. It's thought, and if you don't have an esper with you the only way to detect it is by behavior. If it *communicates*, whether by speech, writing, holovision records, chewed sticks, or drawings in the dirt, it's sentient."

Askel looked pleased for just an instant. This, he thought, made his job so much easier. It would have been such a chore to establish this definition of sentience, even though he could, if necessary, cite scholars and lawyers by the hundred to do so. "Agreed. Let it be so stipulated. And I think you'll be able to go home to your wives and basking sands very soon now." He paused for effect. Takit didn't quite yelp his surprise. "By that definition, I have an heir."

"Of what degree of kinship?"

"Closer than a songbird or a fish. You could even call her an adopted daughter."

"Adopted?"

"Brought into the family, raised there, taught and trained, and given the wherewithal for communication."

Takit frowned in suspicion. "I hope you're not thinking of a pet. They can communicate needs, desires, love, loyalty, but that's not enough to call them sentient."

"Oh, no. No pets, Takit. And I'm sure you'll agree to the sentence when I call her in."

"She's a witness too, then?"

"Of course she is. The deceased can hardly speak for himself. He's

gone, and he had no friends to speak up for him now. He refused to go into space, and he let few visitors land here. No scholars. Just the occasional Imperial inspector or tax-gatherer and the odd trader. What a shame that one of those traders had to bring the plague that did him in."

"A whole world. A whole species. I only wish the event were rarer."

"So do I, Takit. But most species do have colonies and spacers, so a whole species is rarely lost."

"And your heir?"

"I've been fortunate there. The actual relationship is fairly close, certainly closer than that between you and a sandragon. And she, or her ancestors, were frequently adopted as well. I had to repeat the process, the training, to prove her sentence, but it only took a few years. I couldn't use the language of her ancestors, but I am fluent in Fomalhaut handspeech and could use that. She learned it, and she's waiting for us to invite her in."

"I suppose we must." Takit felt defeated. His search for heirs — or their absence — had been thorough, but clearly not thorough enough. He had never seen the signs, or he had not seen their meaning. He had wasted years on this case. If he had truly lost, he would be lucky to be demoted only to assistant auditor, for the IRS coveted the estates of worlds far more than those of even the richest individuals. He would surely never again be an Agent-in-Charge. "You are so sure of yourself. Does this amount to a challenge to my case?"

"It does."

They both turned to the judge, who only now had an active role to play. The Imperium's system of justice was complex, but it worked. Judges, trained both in the rules of evidence and law and in philosophy, listened while lawyers for opposing sides investigated, argued, and debated. When in time the picture cleared and one lawyer had the confidence to challenge his opponent with a single clinching bit of evidence, a *quod erat demonstrandum*, the judge directed the clincher's presentation and ruled on its persuasiveness. A single judge was usually deemed sufficient. Only in criminal cases did the Law dictate a panel of five judges.

The Polarian, quite human-looking aside from his purplish skin, smiled at them both. "I have enjoyed your arguments for the past year or so. So did my predecessor, I'm pleased to say. I'm sorry today will see the end of this case. Your witness, Hound of Justice, will either win the case for you or lose it. You, Agent, will be going home with an empty fleet or a full one. If full, it will be laden with the art, literature, fabrics, jewelry, toys, chemicals, machinery, and foodstuffs of a civilization. If empty, its would-be cargo will remain here for the use of the heir. And in

that case, I have no doubt but that the Imperium will soon be sending aid. I am sure some will be needed before the heir can fully enjoy her inheritance."

Askel nodded his agreement.

"The outcome of this challenge will determine many things. The heir's future will be dim or bright with promise, perhaps even with promise of another member of the Imperium. The IRS will be either angered or pleased. But justice will be served."

All three chorused, "So reads the Law."

"Then let's get on with it. Where is your witness, your heir, Hound Askel?"

"In the anteroom, Honored Sir."

"And I believe my translator can handle Fomalhaut handspeech. I will summon her." As the judge adjusted dials on the console beside his left elbow, the translator's small lens, mounted on the wall above and behind him, turned toward the door to the anteroom. He pressed a button, and when the bailiff answered from the console's grill, he said, "Send in the individual in the anteroom."

While they waited, the judge turned to Askel and asked, "What is she called?"

Askel did not take his eyes from the door as he replied. "I have named her Aileen." He could feel his tension in his muscles. This was it. The fate of one species, the memory of another, his own career, even Takit's, all riding on the next few moments. Would she remember her lessons? Would she be impressive enough?

He needn't have worried. Hardly had the door opened to admit Aileen's black-haired, shambling form than the case was his. As soon as she was fully in the room, her deep brown eyes settled on the judge. Her thin lips drew back from her dome-like jaw and she uttered a curiously haunting hooting moan. And her hands moved in gestures first devised many lightyears away from this third planet of a small yellow star.

The translator did not hesitate. Her handspeech was clear, if not polished, and she was as convincing as Askel could have wished. Her first words were, "Well! It's about time!" ●

If you thought this issue of AMAZING gave you reading pleasure and you want more—ask your newsdealer for FANTASTIC SF—sold at the same newsstand—striving to give you the best and most interesting reading.

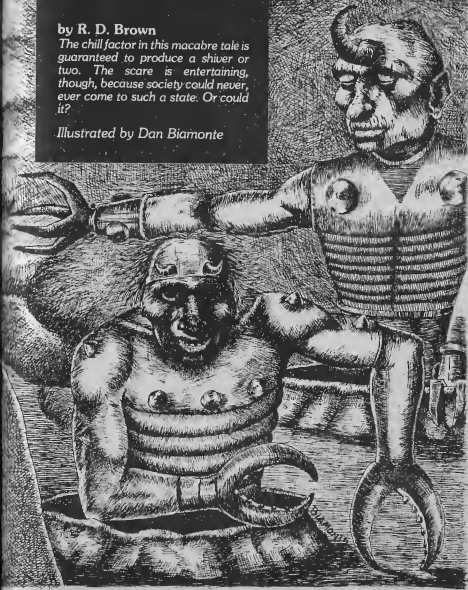


PROSTHESIS

by R. D. Brown

The chill factor in this macabre tale is guaranteed to produce a shiver or two. The scare is entertaining, though, because society could never, ever come to such a state. Or could it?

Illustrated by Dan Biamonte



GEORGE OPPERLY was awakened by the sounds of bombs and sirens. He awoke in the dark with the stench of CS26 boring out his nostrils and an urge to puke he knew would become irresistible in about ten seconds. He made it to the john with no time to spare, getting most of it in the sink. His head reeled and he splashed cold water on himself. This brought his attention to his hands and arms, and the sores.

He looked at himself in the mirror. He was shaking so violently that his face was a blur. Sores were beginning to develop all over him. He sobbed in terror, took a breath for another sob, and a gust of air brought the smell of the gas into the bathroom. There was an open window in his bedroom!

He rushed back to the bedroom, pushed the window in, pressed the seal around it, and turned the air filtration system up full blast, putting his head by the vent and sucking in long gasps. He heard a moan from the bed — Mary Oppery coming awake. He grabbed his wife and pulled her over to the vent, holding her weight by her tinselly hair and shaking her hard.

"Stop it, George," she said, "I'm all right."

He let go of her. "Goddam absent-minded bitch. Why didn't you close the window when you came to bed?"

"Why didn't you?"

"You went to sleep last. You're supposed to check."

Mary sat on the bed and lowered her head, looking somewhat shamed, but looking also somewhat like an animal making ready to charge. "I'm sorry," she said. "I forgot. How do you expect me to remember this kind of thing all the time. Do you know you're the only person I know who hasn't even had a lung job?"

"When I need a part replaced, Mary, I'll get it replaced. Not until."

"Look at your skin, dummy."

"Those clear up in a couple of weeks."

"Couple of months, more like."

A sore on his arm popped, cracked. He felt fluid running down his arm, but refused to look at it. "They still clear up. You know, Mary, I think maybe you left the window open on purpose — at least subconsciously. You want me to get replaced because you think replacements are fashionable."

"They are fashionable, George," Mary hissed. "They are so fashionable that these days, if you don't have a replacement you're suspect."

"That's not true."

"It is, and you know it. Too many people have had to get replacements."

"They cost money, lots of money. The department has to have some justification . . ." he held a finger to her lips. "I know, I've got justifica-

tion now. They're replacing parts automatically now with far less reason than this rash I've got. I'll talk to Pederson tomorrow."

Mary would have nothing to do with peacemaking after that insult, though. She slapped his hand away from her mouth. Being slapped with a nusteel arm hurts. "We wouldn't have to worry about windows if we lived underground."

"I put in an application as soon as I made 'A' but everything in Old Fort Knox is filled. I haven't been class A that long. All right, I'm sorry for that remark about the window."

She relented. "OK," she said, and leaned back on the bed to prepare for sleep again.

George walked over to the Doc in the corner and inserted a bill in the roller. The Doc began to buzz and click. "But these damn replacements are going to break our economy," he said, last word-wise. "Look at you. You've had three." It occurred to him that his mouth was getting him into trouble again. "I guess you've been maintaining my status for me," he concluded. He laughed. She laughed. Privately, he wondered if she were accident prone. First an arm, then lungs and chest, then a skull fracture. Tinsel hair, unchanging in length, attached to a shiny nusteel skull. A year and a half ago a bomb had whistled down onto a crowded street, and everyone had ducked in time but her. He looked at her body across the bed, shimmering with invulnerability, almost half replaced, and cursed. He looked down at his own vulnerable flesh, being swabbed and bandaged by the Doc. And cursed.

By the time the Doc had finished with him it was time to put on his safety suit and go to work. An armored personnel carrier stopped by his freehold building every hour and a half to pick up workers. George hated the long wait. He decided to walk to work. It was an hour's walk, but he'd still probably get there before the APC did. There was hardly ever any bombing during the day.

Two blocks away from his freehold he walked into devastation. Louisville Supply had been bombed into rubble. The instruments on his safety suit showed that in addition to a high concentration of CS26 in the area, there was a trace of radiation — far more likely to have come from something in the supply compound itself than from the bombs. He looked out over the slabs of concrete, the broken stone, the ash, and saw one lonely wall standing amid the field. Something white flashed from behind it. He pulled his gun and went over to investigate.

Behind the wall was an AAA crab-man who scuttled away from him weakly on all fours, connected to a parachute (the flash of white) which was tangled in its cord. The crab-man's carapace was severely cracked. His chute must have become tangled, somehow, in the air. The sight enabled George to overcome his revulsion at the miscegenous creature enough to smile at the implications of what he saw. It was true,

then, that the African-Arab Alliance didn't have enough jet packs to go around. They might beat the AAA yet. His mouth contorted with disgust and he aimed into the crack in the carapace and shot the crab-man, who twitched a little, then stopped moving.

George hurried on. There might be uninjured ones about, and a tear in his suit would likely kill him before he got to safety.

Of all the AAA genetic modifications, the clawed varieties scared him the most. Of course, the more he was replaced, the less there would be to fear. The claws could do no more than scratch nusteel. But all of the AAA creatures gave him the creeps, and would undoubtedly continue to do so no matter what happened. In the nineteen years the war had gone on they had never stopped giving him or his fellow-countrymen the creeps. In fact, he remembered, it was the AAA's refusal to sign the Genetic Research Treaty that precipitated the war.

This damned fiddling around with peoples' genes should have been prohibited at the time of the first *in vitro* conception, George thought. The immorality of genetic modification was plain to most folks even then. Instead, it had attracted a host of scientists and piles of money, and when the programs were made illegal in one place, the men and money moved to another. The UN acted too late. By the time the Genetic Research Treaty was passed, those few Arab and African countries which still supported it had found it too profitable to quit, and were spawning armies of monsters. George winced. "Armies" was all too accurate a word.

At least the big bangs had never come. The fear of The Bomb accounted for that only partially, though. The AAA had used a few tactical nuclear weapons at the beginning, combined with some bacteriological wonders, but the UN had not bothered to reply with any nuclear weapons at all. Instead, they shot over some chemical agents that made mustard gas look like Ben-Gay, and the war was on. The AAA had defended its citizens by *breeding* them, and the UN had done the same for its people by *replacing* them. Both techniques had succeeded well enough to drag the war on for almost two decades. Maybe The Bomb would have been better in the long run. Such thoughts made George feel more and more defenseless, and he was glad when he got to the Louisville Personnel door.

He inserted his card and was admitted, went down to his office and stripped off his suit. Pederson was waiting for him. "My God," Pederson said, "what happened to you?"

Oppler's first reaction was to tell him about the crab-man, but then he realized that Pederson was talking about the bandages all over him. Great. A perfect opening for introducing The Subject. "I wanted to talk to you about that," he said, "The wife left a window open last night — you know, we still have to live above ground even though I'm an 'A,' and I was . . ."

Pederson whistled. "You haven't heard about CS27 yet, have you?" "What?" Chemical agents had been combined by the enemy into a kind of stew, the broth for which was CS. Every time new ingredients were fitted in, the number was raised.

"One new agent has been added. They haven't figured out what the effects are yet. They haven't even figured out whether a safety suit protects against it."

"Pederson, let me get to the point right away. I want to go over to CHD and have some tests done today, see about some replacements. How bad do you need me?"

"Hell, I don't need martyrs at all. I'd say it's about time you got over there. Do you know that people have been wondering about you?"

Oppler's face flushed with anger. "What the hell right . . ."

"Now, don't get started. I'm telling you this for your own good. One of your fellow workers, I won't mention who, has actually questioned your mental stability — questioned whether or not you were suicidal. Repressed death-wish, you know, typical laymen senseless psychiatry. I stopped that, of course. It never got beyond me. But still, those kinds of thoughts do occur to people." Pederson tapped his nusteel chest.

"Anyway, what I'm saying is to get a replacement as soon as possible, to get on over there right away. Maybe they can learn something about the effects of this new agent from you. Take all the time you need."

"Thank you, sir." Oppler was unsure about just how thankful he really was. He slipped his safety suit back on and started for the door.

Pederson's voice caught him in the office vestibule. "Of course, if you should get back in time today to do any work, we need to reorganize police assignments. They dropped some crab-men in the area of the hit."

Oppler didn't feel like telling Pederson about his meeting on the way to work. He wasn't in the mood for the obligatory congratulations on his kill. "Oh, really?" he said, "Rotten luck."

THE CENTER for Human Development was a converted ten-story freehold building much like his own, except for the fact that it was underground. After he told the WAC at the front desk his business there she said, "Physical and testing in room 107. After that, you'll want to see our Mr. Capra in 652."

They photographed him inside and out and stuck him full of needles. One medical assistant measured him all over with calipers — something George had never heard of being done there. When George asked him about it, he told George to shut up and measured his mouth. After it was all over, they made George sit for a half hour before letting him go down to room 652.

The sign on the door read "H. Capra, Prosthetics Director." He knocked and a cheery voice said, "Come in."

The office was cluttered with plaques, framed certificates, and trophies. Behind an enormous oaken desk a glittering, all-nusteel man was rising. George started, and began to back out of the door, when the man said, "Relax, George, and come on in. There are going to be a lot more like me pretty soon; it's time you got used to us." He grinned, revealing shiny metal teeth, bounded over the great desk, and shook George's hand. "I'm Harry Capra, have a seat and let's talk." Capra skipped happily back to his chair behind the desk, and George took a comfortable seat next to it, shaking his head sharply to rid himself of bedazzlement.

Capra pulled some papers off the desk and waved them around. "I've got your reports here. We still don't seem to be able to figure out what that new agent's for. It's driving us crazy."

George smiled, a little. "Maybe it doesn't do anything. Maybe they just put it in to drive you crazy."

Capra blinked, then laughed. "Maybe you're right. Anyway, the other twenty-six agents have done their work. Actually, your exposure was slight — and a good thing, too — but the skin on your upper body has taken it pretty hard."

Maybe that was what had happened to Capra, George thought, *metal skin*. "So you're going to replace it?"

"Not exactly," said Capra. "Please try not to be upset by this question, but why did you wait so long before coming to us?" He pulled a form out of the stack of paper and held a pencil over it expectantly.

"I've never been this badly off before. Replacement costs the department a lot of money. I didn't want to come in for something trivial."

"An admirable attitude, on the face of it. But surely you must know that the government encourages replacement. A hurt arm, say, gets replaced with a better arm, and that arm's not likely to get hurt again. Prosthetics means protection, and protection is the government's job. In fact — I tell you this privately, you understand — in another month having at least one replacement is going to be a qualification for class B citizenship or better. Surely you can't be that blind to what I might call the whole direction of a society."

"I tried to explain . . ."

"Come now, confess!" Capra yelled, gesturing expansively, sending paper flying, his grin widening, "aren't you a little put off by this . . ." His fist clanked against his chest, ". . . a little scared by it? Be honest."

George sighed. "I guess I have to admit . . ."

"Of course you are! And it's a perfectly normal reaction. I felt the same way myself at one time. Not any more, of course." He grinned and clanked again, then composed his metal face into a more serious expression. "Normal or not, though, these attitudes are anachronistic,

and are going to have to be recognized as such. And, in fact, they will be. Officially."

Opperly began to panic. "Does this mean I'm not going to get a replacement?"

"Oh, no. You're safe. You came to me in time. But you're going to have to get a hold on yourself and develop a more positive attitude toward prosthetics, because your replacement is going to be a lot more extensive than what you probably planned on."

George wished Capra would get to the point. "How extensive?"

"Well, remember what you said about the high cost of replacement? I only wish more people understood the enormous expense involved in protecting our citizens. For years the state tried to save money by replacing only what seemed necessary at the time — just the most affected areas — on the theory that the war wouldn't last much longer. Now we know that a short-sighted policy that was. Patients come back again and again. Your own wife, it says here, has been to us three times, and she's not at all exceptional. The solution to this problem is now clear. For a slightly larger original investment we can save a lot of money in the long run with Total Replacement."

George began to feel dizzy. "Total?"

"Total."

"But I don't need everything replaced, just . . ."

"Mr. Opperly, you weren't listening. We don't want you coming back here. We don't want you to be injured again. Preventive prosthetics is the name of the game from here on out. You must learn to develop a healthy attitude toward it. The directive was signed by the Secretary General only two days ago, and it's not going to change for a long time, if ever. We're going to do it all in one shot. You'll be one of the first to benefit from this policy, one of the first to be truly and completely protected." Capra expanded his chest with pride. "I was the first. I bet you didn't know that. Two years ago . . . experimental, then." He pointed to his shoulder.

George leaned over and looked where Capra was pointing. There was an identification plate on the shoulder which read "TRU1." "You?" George asked.

"Total." Capra rose up and beat his fist against various parts of his body. They all clanked.

A thought occurred to George. "What about the brain?"

"Certainly," said Capra. "There are nerve agents in that gunk they shoot at us, you know. Why worry about them?" He reached into a desk drawer and pulled out a clear packet of goo. "You must know that we've been able to manufacture brains from the various electragels for over a decade. Electragel neurons, if you can call them that, may not work the same way as bioneurons, but they accomplish the same thing,

or can be organized so they can accomplish it. The stuff set up its own circuits and the latest brain made from the gels has, I understand, actually a slightly higher storage capacity than the biological brain. The only problem with using it in prosthetics was that they couldn't find a way to transfer the information into it from a biobrain. They solved that problem two years ago, and now the equipment for accomplishing the transfer takes up about the space of a beer can."

"I've heard about the electragels," said George, "but I've never heard of this."

"It hasn't been especially publicized. But we've been replacing just brains alone with the new techniques ever since they were perfected. Now, of course, an electragel brain is included in the Total Replacement Unit, along with the transfer equipment." Capra shuttered his eyes. "Of course, there couldn't be much publicity for it. For one thing, when we replace a brain the experience of transferral is necessarily eliminated. I mean, when the information is being transferred, neither brain is thinking, so there's nothing to remember. And we don't tell them. So folks who've had their brain replaced don't know about it."

Opperly laughed nervously. "So my brain could have been replaced already?"

Capra smiled. "It might have been. Those records wouldn't be in this set. Anyway, it doesn't really matter, since you're going to be replaced tomorrow or the next day. And the unit can transfer information from electragel to electragel, too."

Capra looked at the clock and said hurriedly, "I'm sure you must have many questions, but I've got another appointment in three minutes. We'll schedule you another half-hour tomorrow..." he pulled a big sheet of paper which had been divided into a lot of little squares off the floor and wrote "Opperly" across two squares, "... and get you replaced and out of here."

THE SOUNDS of bombs and sirens woke him up again that night. He looked at the clock. No, morning. It was a little after five-thirty. His appointment was at seven. No sense in going back to sleep.

He took off his bandages and got into the Doc, looking down at Mary who, he decided, could sleep through anything. He looked at her tinsel hair scattered on the pillow, her nusteel skull. Was there pink and grey tissue inside that shell, or electragel? The explosion had been a year and a half ago. It could be. He tried to think of any personality changes occurring after the explosion. He couldn't think of any. But then, there shouldn't be any such changes, whether her brain had been replaced or not.

Right, he said to himself, *there shouldn't be any changes. So why does it bother me? Capra is right. My attitudes are anachronistic.* But



he knew he wouldn't be able to resist asking the CHD people. Would they tell him? Probably not, but what the hell.

The bombing seemed to have stopped. He could walk there, think things out. The Center For Human Development was only a little farther than work. He put on his protective suit, decided to skip breakfast. Shit on a shingle on Wednesdays, anyway.

GEORGE WAS not a man especially sensitive to emotional vibrations but it was obvious to him that H. Capra, Prosthetics Director had changed considerably since yesterday. For one thing, he had become, somehow, a pompous ass. He was far stuffier.

Capra pointed at a chair. "Please be seated, Mr. Opperly."

Opperly sat down in a wood chair with a slatted seat. He wriggled uncomfortably.

"I have been informed," Capra said, "that you have been harassing our employees."

"I beg your pardon," said George, catching it a little, "I was merely

trying to find the answer to a trivial question, one which should have been a simple matter for your people to answer. Perhaps you can answer it."

"I can't tell you anything about your wife, Mr. Opperly. That information is classified. I'm surprised that you would ask."

"I had to ask. Forget it. I expected this, really."

"I know the answer," Capra giggled, "but I won't tell you."

George looked up quickly. Capra's face was a blank. Had he heard him right?

"I know many things," Capra went on, "Many secret things. Everything has been arranged."

"Huh?"

"Everything has been arranged. There was no need for additional measurements, all the reports taken on you yesterday jibed. Your replacement is even now being sent to your freehold. Your wife will sign for it and it will be there when you get home."

"Wait a minute. Are you going to operate on me at home?"

"Not necessary. Since you are being Totally Replaced all that really has to be done is to transfer your brain contents, if you have any, into the unit's. TRU8071 is geared to your brain wave patterns. When you get home stand directly in front of it and push in on the identification plate. You will shed your corruptible body and put on celestial garb."

"Huh?"

"As I told you yesterday . . . I think it was you . . . the transfer unit is incorporated into the TRU. Just press the ID plate. The transfer will burn out your present nervous system. Nothing we can do about that, even if we wanted to." He giggled again. "Think of the power, Mr. Davis. You will gain the secret knowledge." He took the clear packet out of his desk and squeezed it. Electragel splattered over the desk. He stared at it.

George got up. "It's been a pleasure, sir." He started backing away, nervously.

"I'm sorry," Capra said, shuddering. "I can't think what came over me. Maybe I ought to have a check-up." He stood up and offered George his hand. "I'll be seeing you again."

George hung around CHD for a while, until the WAC began giving him a mean stare. Then he called Pederson to make excuses for the day. He wanted to go home, to confront TRU8071, his new self. Pederson was sympathetic, but jealous, which improved George's mood.

"Totally replaced! George, they must be grooming you to take over my job! Can you put in a good word . . ."

"Don't worry about it. It's just a new policy. We'll all have them pretty soon. Take my word for it, you can get a snuffle tomorrow, go in to have

a sinus replaced, and come out with the same deal."

This news made Pederson so happy that George got the day off.

George decided to walk home again. He had to admit to himself that the thrill he got out of the risk in this exposed walk was the main reason he took it, and this might be the last time he could enjoy it. After he was replaced, he laughed to himself, he would be far less vulnerable on these walks. He would probably wind up taking the APC like everyone else.

The rubble where Louisville Supply once stood had been bombed into smaller pieces of rubble. He squeezed a finger under the seal of his face flap for a fraction of a second and sniffed. CS26 — no, 27 now. He wondered if the brains at CHD had figured it out yet.

His breathing became more labored. He realized that he was tiring out; the gas must be getting to him in spite of all the Doc could do. He began to regret taking this walk. A piece of concrete slipped unexpectedly beneath his feet. The slab seemed to be moving of its own accord. He fell on his side hard, the wind rushed out of him and fogged his mask. He felt something hard grasp his leg and pull. Shapes, indistinct through the fogging, seemed to be coming out from under the slab. As the mask cleared, he saw a claw coming at his throat. Pressure was applied at his pressure points with clinical precision and he blanked out.

HE CAME to in an underground room — little more than a hole in the ground, really — he could feel the roots pressing against his back where his stool was shoved against the wall. He was tied to the stool, he realized, and trussed up all over. It was an uncomfortable, primitive room, but it had electric light. It was very bright, in fact. Furthermore, there were several spotlights shining down on him. He was the star. He must be the star, because he was naked. Was this a porno movie, then? He couldn't see any cameras, but then, he couldn't see anything, because the lights were so bright. But, wait a minute. A one-man porno movie would be boring.

"Where are the women?" he asked.

"Mr. George Opperly," a precise, clerical voice answered from in back of the lights, "you are coming out of the effects of a drug we have given you. You are in the hands of the Triple-A Army. Believe it or not, we are going to let you out of here alive, but you have to show signs of normal behavior again first."

It began to come back. "In the claws of the Triple-A-A, you mean."

"As you will," the voice answered. "I happen to have hands, personally. Others of us have claws, others . . . other things. But we are all whole men."

George laughed. "How about whole 'other things'" He imitated the

other's peculiar accent as best he could.

"Whole men," the voice went on, "and so are you. You, too, are a whole man. You surprise us by not having defiled your body with metal. It is also lucky for you, or I would not have been able to restrain my people from killing you."

"Where am I?"

"It is also lucky for you that you do not know that. That, too, would bring about your death."

"Why am I here?"

"It was assumed that you were an abomination. We were going to torture you and then kill you. It is a sort of ritual." The voice became aggrieved. "If our broadcasts weren't censored you would know what we were going to do with you."

Terrorism is a lot less effective without the media, George thought, smugly.

"We never expected to find anyone coming from a class A facility to be a whole man, Mr. Opperly. You would not tell us under drugs, perhaps you can now: why is it that you have not defiled yourself?"

Adrenalin burst into George's system and he thought that his head was clearing at last. "The reason I have not 'defiled myself' is because you haven't been able to screw up any of my body parts enough to get a replacement."

Another voice said, "Surely the loss of a body part is not a reason for turning yourself into a thing; half flesh, half metal."

It began to dawn on George that the fantastic stuff coming out of the mouths of these AAA soldiers was spoken in all sincerity. Perhaps the government shouldn't have censored their broadcasts. It was amazing how bizarre a society could become after nineteen years of war. *How can we ever hope to understand the enemy?*

"Let me get this straight," he asked aloud, "you cut off a person's leg, and then when he gets a crutch you kill him because he got a crutch?"

A fist came out of the darkness and struck George in the mouth. The soft earth in back of his head cushioned the whiplash.

"Leave him alone," said the first voice, "he doesn't realize what he is saying. His mind is poisoned, and part of that poison is our own." The first voice came into the light. It was a young brownskinned man — about eighteen years old — with a goatee. "I am Dr. Ghazali," he said. "Let me show you something." Ghazali was not a crab-man. At the end of his left arm he displayed a hand with five fingers. He appeared to have been modified in some way, though. Under his jacket something moved, and both arms were in view.

Ghazali pulled a knife from his belt and cut off his left little finger. The blood spurted for only a second, then stopped. Pink, wrinkled flesh seemed to have grown at the end of the stump. "By this time

tomorrow," said Ghazali, "it will have grown back. Sergeant, cut the ropes and give Mr. Opperly his clothes."

George was beginning to suspect that the past two days had been a nightmare. In a while, he would wake up. But, no . . . he had heard of people thinking that before in similar situations. So it must be real.

Ghazali spoke again. "This kind of regrowth process could have been known to your people. We have been broadcasting the information, along with various other kinds of news, for the past eighteen years. Since we have to let you go anyway, we will let you take some messages."

"Let me go?"

"Yes. Your mind is warped, but you are no abomination. We have little choice. There's no chance you'll be able to lead your troops here, anyway. They'll never find us, probably. And if by some strange chance they should find us, it would make little difference. We've got this war won. In another four or five years it will all be over. For instance do you know about the robots they have now, into which your people are locking their souls?"

"You don't know what you're talking about," George said tiredly, "a prosthetic is a prosthetic: a tool . . ."

"The Total Replacement Units, then?"

"Yes."

"You must beware of them. The new gas we put in the air, do you know of it?"

"Yes."

"It is designed to effect certain changes in the confluences of electrical paths in encephalogram — that, and nothing else," Ghazali smiled. "This will produce a diversity of effects, ranging from a complete wiping of memory to dangerous psychopathy to catatonia, or whatever their encephalogram equivalents are. It may even turn some of the metal men into geniuses, although I very much doubt it. You must protect yourself." His expression turned serious. "We shall drive your metal men mad, do you understand? They will become dangerous to you, to themselves, to everyone."

George remembered Capra's odd behavior and began to believe him.

"You will leave here. You will go out and tell your people these things. You will have no choice. Among other reasons, it will be your duty as a good citizen to do so. And their despair will contribute to hastening the end of this war. Goodbye, Mr. Opperly."

THE NEXT time George came to, he was a little quicker on the uptake. But, then again, maybe they used a different drug on him this time. No credit, no blame. He seemed to have instantly changed his

environment, suddenly being in his safety suit, fully clothed, at the door of his freehold building. It was night already. He ran to his freehold, burst into the living room, and cried, "Mary! You'll never believe what happened to me on the way home!"

Mary was sitting on the couch, holding the dead metal hands of a TRU with Opperty's face.

Mary's head turned slowly around. "T. R. U." She spoke each letter like a prayer. "Total Replacement Unit. Oh, George, you're so lucky." Her face lit up. George couldn't remember having seen her like this since the first year of their marriage. "Activate it now, George."

George choked. "Mary, I'm afraid I'd better not. Did you hear what I said when I came in? Something strange happened to me on the way home. I think we'd better discuss it first."

"Why don't you get into your replacement unit first, George. Then we can discuss it. It only takes a minute." She got up from the couch. The unit's hands fell against the seat with a thud, the torso leaning to one side. Mary put George's hands in hers and led him to the unit.

"Mary, listen. What happened to me on the way home suggests that there might be something wrong with that thing. I ran into some crab-men."

George had expected, even wanted a strong reaction to that news. But the reaction he got was too strong. Mary produced a blood-curdling shriek and backed away from George. He caught her arm. "The crab-men," she said, "they're coming here, aren't they? Nothing is safe. Where is my letter opener?" Tears began to pour out of one eye. "Get into the unit now, George. It's your only chance. I don't care for myself . . . well, I do, but it's only keyed to you, the delivery man said so, and besides, I tried . . . and at least you'll be safe." She pointed to the couch. "Look, George, it wants you."

He looked at the couch. Sure enough, the TRU had straightened its back and was raising its arms toward him. George gasped and backed away, pulling his wife with him. "It's not supposed to do that," he whispered.

"Of course it is, George."

"No it's not. The gas must have activated something." He wondered what.

"Of course it is, George, or it wouldn't be doing it." She laughed mechanically, like a novelty-shop laughing toy.

George felt sick. Mary was becoming hysterical. My God, she was hysterical. He took a deep breath and slapped her. Her head jerked back and came around again. Then it jerked back, and came around again, and back, and forth, continuously. "Mary, stop it!"

"Stop what?" Her head continued repeating the motion. Tears were streaming out of her left eye, her right was dry. Her behavior was

bizarre, to say the least. The conclusion was horribly obvious. She had an electragel brain, and everything the AAA had said to him was true. He looked at TRU8071. The new agent also obviously had the effect of stimulating electragel brains that weren't supposed to be activated. The unit rose clumsily to its feet, staggered, fell, and began clawing its way up again.

"Stop what?" Mary asked.

"What?"

"Stop what?"

George looked at the metal reproduction of his face rising up level with his own, tottering, struggling for balance, smiling, frowning, grinning in a random pattern of expressions. He expected the thing to fall down again, but it flung a leg out and caught itself. It was learning to walk. It was learning very fast. And it was walking towards him. It was responding to his own brain wave patterns, doing what it was designed to do. He was the stimulus.

From other freeholds in the building he heard various yells, hoots, screams, and thumps. Whatever resistance there was in electragel brains to the new agent, it seemed to have been pretty consistent from brain to brain, and it seemed to have run out.

"Goodbye, Mary."

"Stop what?" Mary asked.

The thing took another step towards him, picking up speed, and another, while George remained by the door, frozen with fascinated horror. Suddenly the thing stopped, and its arm began to climb towards its ID plate. The fascination broke then, and George seized his face mask and ran. Maybe he could get to CHD. Somebody there might know what to do.

The night was cold. Moonlight filtered through a heavy layer of clouds onto the field of rubble, showing irregular planes of glimmering white concrete sticking up at odd angles out of nothing. He heard the TRU coming up behind him and he cut out across the rubble again. The thing was still pretty clumsy, no matter how fast it could move its legs. Maybe on the run to CHD the thing would trip and break something trying to negotiate the twisty hunks of concrete.

He laughed bitterly. Fat chance. The thing was a permanent prosthesis, designed above all else not to break. But he couldn't think of anything better, so he kept running. The TRU lumbered behind him, slowly catching up.

The TRU is stupid, George thought. If he could just get his fear under control, he could outwit the thing. Unless he had an electragel brain, too, in which case he could hardly hope to outwit a pegboard. But then, if he had an electragel brain, the whole incident was probably an hallucination and he had nothing to worry about. Nothing to worry

about at all. A nervous gasp of laughter escaped his lips.

Think. The best interpretation of events, of what happened at his freehold door, was that the transfer of information from his brain into the electrage brain, of his personality from himself into his TRU self, could only be accomplished at a distance of a few feet, else his running away would have accomplished nothing. The thing could be looked on as having a weapon with only a short range. He stopped, gasping for breath, and looked behind him. The TRU stopped and pushed its ID plate. It took a few more steps and pushed it again. That settled the question.

George observed further that it seemed to be incapable of doing two! things at once, like running and pushing the plate. What's more, the thing obviously didn't know its range. It started loping towards George again. George pulled his gun and fired at it. The bullet hit it in mid-torso and the thing jerked and stopped, but only for a second.

He started running again, leading the TRU over the twistiest parts of the bombed-out compound. Every now and then he would hear the thing trip and crash, and George would stop, catch his breath, and try to think. He was unfamiliar with the design of the thing. He had never paid much attention to prosthetics — well, no time for regret now. Was there anywhere he could shoot it and hope to disable or kill it?

The plate. The ID plate pushed in and out, providing the closest thing there was in the TRU to a hole leading to its innards. The plate was a switch, connected in some way to the electrage brain. If there was any hope, it lay in shooting the TRU there. Provided the thing didn't learn to do two things at once, and provided it stopped out of its range and within George's. It was a gamble. George grinned, got into prone position, and waited.

The unit really did move amazingly fast, he decided. It closed the distance to twenty feet in a minute. Then it began pressing its plate, taking two steps, and pressing its plate again. When it got about eight feet away, George fired.

There was no burst of sparks, no smell of burning. For a second George thought he had failed. Then the thing crashed to the ground and moved no more.

George stayed in the prone position, shivering, for a good ten minutes before he got to his feet and began the long walk to CHD to make his report to whatever authorities were still sane.

WITH BORED persistence Dr. Ghazali proofread another of a long line of radio programs to be broadcast to nobody. Except some faceless UN censor, he reminded himself. Briefly, he studied his left little finger. It was full length already, and the nail was beginning to push

its way up. He felt a surge of pity for the poor, stupid UN forces, trapped in a tin dream. Maybe, at least, one of his broadcasts would disturb the censors enough to get them talking privately to others. Maybe not. Probably they would never save themselves. He sighed.

He was alarmed by a clatter outside the door, and voices. He fumbled in his desk drawer for his pistol, then the voices became clearer. He heard snatches of Ewe and Arabic. He sighed again, then looked at the clock. The first patrol was not due back for another quarter-hour.

The door swung open and a sergeant and a corporal came in backwards, dragging big canvas sacks. "We found this right outside Oppery's door," the sergeant said, emptying one of the sacks. George Oppery's body tumbled onto the floor.

"Dead?"

"Yes," said the sergeant. "We also found this."

The corporal emptied his sack, and a metal man with Oppery's face came sliding onto the floor. It was bound tightly in ropes, but it was not struggling, nor did it look like it had ever struggled.

"The ropes are purely precautionary," the sergeant said. "It was sitting next to Oppery's body, doing nothing at all. It hasn't reacted to anything since we first encountered it."

Tears came to Ghazali's eyes. "We should have killed him this morning. Now it is too late. We'll destroy this thing tomorrow." Ghazali peered closely at the blank metal face. "I wonder what it is thinking?" he asked no one in particular. ●

AMAZING FACTS

The future of Prosthetics

Replacement of human parts on a broadscale basis (like what was done for TV's Bionic Man) is apt to become as common as eyeglasses, according to experts. Already being used are such synthetic replacements (made of silicone, teflon, metal, plastic, dacron or ceramic) for the following body parts: nose cartilage; eyeball; Eustachian tube; heart valve; heart patches; bile duct; arteries; electronic bladder stimulator; finger tendon; skull; ear cartilage; shoulder joint; trachea;

electronic heart pacemaker; hip joint; and thigh bone.

Researchers are looking for materials that would function as special converters; for instance something to replace the chemical-mechanical function of a muscle, or the chemical-electrical functions of taste and smell.

While the prospect may seem frightening, as portrayed in the story, "Prosthesis" (in this issue), the real benefits to mankind are multifold. And as we march more and more into the reality of such initially "scary" technological developments, the less and less ominous they seem. ●

MECANO



**Storyline by Mary Ann Landers
Illustrated by Mike Romesburg**

Reader participation series: Numan is the ultimate synthetic man, heir to a dead mankind's knowledge, created by ULTIMAC to find a new world for a "new" mankind. Send ideas for further adventures (1,000 words or less) to NUMAN, Box 642, Scottsdale, AZ 85252. \$25 upon publication.

USING A ship created for him by ULTIMAC, Numan covers vast distances across the universe, travelling through "holes" in the fabric of the space-time continuum.

Nearing an Earth-like planet, Numan lands unobtrusively in the backwoods to explore its possibilities as a new home for his race. He

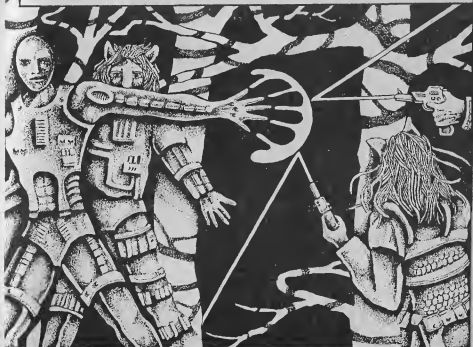


SAPIENS

discovers a civilized species resembling great, golden cats with long, shimmering manes; these beings walk like man, and have paws that handle tools with dexterity. They communicate telepathically.

Following distressed thought impulses, Numan comes upon a group of feline-beings who are bullying one who looks like them, but who, in fact, is a robot-feline.

Numan rescues his fellow robot, whose name is Silvermane. The two become friends and as they converse with their minds, Numan learns that the robots on this planet are mistreated and that many different factions of the inhabitants are warring with one another. They are on the brink of a global holocaust, much like the one that destroyed Numan's ancestor, mankind.





Silvermane and some of his fellow robots work on the estate of a wealthy feline, an army officer who is leaving for battle in a war-torn corner of the planet.

The officer's son, Goldface, is an unconventional youth who leads a small band of felines and robots working for brotherhood between the races. Silvermane introduces Numan to Goldface, and they become tentative friends.

News comes that Goldface's father has been killed in battle. The son now has wealth and free reign to crusade for his cause. He counts on Numan, the gifted Terran robot, as his trump card.

With mixed feelings, Numan accompanies Goldface and Silvermane to the ruling council where he surprises the members with his appearance and pacifist ideas. They throw Goldface out of the council chambers and the robots into chains.





The two robots, Silvermane and Numan, had been temporarily overpowered, but Numan soon causes their shackles to crumble, using his pschyokinetic abilities.

As a guard approaches, the Terran stuns him with a paralyzing mental bolt, and the two flee the prison. The sirens begin to wail as the inevitable war begins.



Our former captives now rush unnoticed through the pandemonium of felines scrambling for cover as bombs explode around them.

Reuniting with Goldface and his comrades, Numan and Silvermane agree to rescue the group from the approaching Armageddon and take them to another planet. They all board Numan's space vessel and escape the final holocaust. After resettling them safely on their new world, Numan bids them farewell and continues on alone in his quest for a new home for Mecano Sapiens. ●

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ARIEL'S DISEASE

by Edgar Pearl

Illustrated by Steve Fabian

*Is loneliness man's worst enemy? Or
could there be circumstances that
would make such a condition a better
option?*

FOR SEVEN weeks he had waited for human company, then he changed his mind. When Kolcha 4, the last of his colleagues, died from the unexpected disease and he buried her out on the bleak plain next to the others, he sat down on the red clay soil and cried. He was afraid that he would be next, that the disease which took the other four would take him too, but more than that, he was afraid of being alone. He and Kolcha had talked about it.

"They won't come until we are all dead or free of the disease for three months," she said.

He knew that. They would not take a chance on introducing the disease to any of the settled planets. Blood samples from each of those who died waited in the cryolator. They would be taken back to Kappa-5 or maybe Sol-3 and analyzed and only when the virus, if that's what it was, had been analyzed and an immunization prepared would anyone else return to Ariel-2.

"I think I'd rather die than spend three months here alone," he told her.

"I don't think I would mind," she said. "It might be a nice change." She saw the hurt in him and quickly added, "No offense, Benj. You know I like you." A smile swept across her soft brown face and she took his hand in hers. "I only meant between being dead and being alone."

"I know."

He reached up to kiss her, but she held him off, reminding him about the disease, and that night he was sorry he had not kissed her anyway because she broke out in a cold sweat just as the others had done and then she vomited and an hour later she was dead. Benj took the blood sample and in the morning he went out to the plain and dug in the red clay until there was a hole large enough for Kolcha's body.

For almost an hour he sat on the one large rock visible on the plain. Finally, he wiped his tears and walked slowly back to the base, but he didn't go in to call headquarters or write his report; instead, he got out the sled and set off for the hill that was officially known as 145, but which the team called Lookout Hill because it was the tallest spot on Ariel. There he sat and looked out over the planet they had all come to little more than a month ago. The hills rippled away from where he sat and then stretched out to the arid plain where the other members of the team were buried. He could not make out their graves, but he could see the two domes of the base camp. There were shrubs scattered about the plain, but no trees, and no animals, just some single-cell organisms all of which, they had thought, were harmless. The samples scooped up by robot scouts and returned to Kappa-5 for examination must have missed the kind that had now taken four lives in less than a week.

Ariel-2's sun, smaller than Sol, curved down towards the horizon. Benj watched until it seemed to rest on the base camp like a third dome.

He felt a chill. Was it the beginning of the sickness or just Ariel's cool evening? A reassuring breeze swept over him and he hurried down to the sled because he was not sure he could find his way back to the camp in the dark.

One dome contained working quarters and the other living space. The living area dome, where he went now, was officially known as D-611C, but Benj called it *Domecile*, a joke he never succeeded in explaining to Kolcha and one that the other members of the team did not think funny. *Home sweet home*, he thought, putting on a tape of music and pressing the buttons to get his dinner ready.

After dinner he ran a Vidtape of an old play. He felt a bit guilty watching it because he knew he should be in the other dome writing out his report. Arn 1 — 37468 who commanded the expedition had already written reports on the first two victims and transmitted it back to headquarters. Then Arn succumbed and Benj wrote that report describing the symptoms and how none of the antibiotics or antivirals or antifungis worked and how they were still unable to isolate the cause. He should tell them now about Kolcha, but he didn't feel like it and after the play he went to bed.

The buzzer sounded in his dream like an alarm clock and he woke up thinking he was back in college and that he would be late for Astro if he didn't hurry, but he quickly remembered where he was. The buzzer was calling him to the Transceiver in the workdome. There was a message from headquarters. Benj checked the clock. He had slept for six hours and it was already late in the Ariel morning. The buzzer sounded again. He slipped into his workalls and went next door.

The voice came through loud and clear. A robot scout was on the way with some new drugs to try. It would pick up the blood samples. Benj 1 — 93647 and Kolcha 4 — 6258 were to remain on Ariel and carry out their assignments.

"Kolcha 4 — 6258 died last night," Benj said. "Same cause. Report follows."

The seconds went by as his message flew through space and an answer returned.

"Report daily same time. We will come to collect you in three months."

He waited for some additional communication and they apparently waited for some response. After a minute the yellow light on his console went out indicating that back at headquarters they had stopped sending. Benj switched off his own sender and went back to the *Domecile* to make breakfast and contemplate his situation.

If he survived for three months they would pick him up and bring him back to Earth where they would probably keep him in isolation for another month or more. If he succumbed to the disease they would

stay away, perhaps sending robots to scoop up soil samples until they isolated the cause and found a cure for it. Either way it was an unimportant planet and would not rate a high priority back on Earth. He imagined himself lying out on the Ariel plain for years to come. The gentle winds would gradually blow some of the thin dirt over his body, but then in the short rainy season it would be washed off. Some day another expedition would arrive, find his rotting body and bury it. Well, at least he could save them that trouble. After breakfast he went out and dug a grave for himself next to Kolcha's. At the first sign of the disease he would go to the grave. Having observed the others die, he knew he would have time to climb in if he was not too far away, and where, he thought, was there to go on Ariel? Then the dirt that blew over his body would stay and gradually he would be buried.

FOR THE first few days after that he stayed very near the base camp, wanting to be comfortable when the chills started racking his body one way, and the perspiration broke out and pulled his body the other. He kept a container next to his bed when he slept so as not to mess the floor when he threw up, though he laughed at himself, too, for caring. Each morning he reported back to headquarters that he was still alive. They acknowledged his message.

On the fifth day the robot ship arrived. He took off the new drugs, wondered whether to take one of them right away or wait until he got sick. There seemed to be no instructions about that so he just put them in the refrigerator and took the blood samples out of the cryolator. This was all of Arn and El and Kolcha that would be returning. His hand trembled and a tear peeked out of his eye and trickled down his cheek as he thought of them, especially Kolcha who wasn't even from Earth. She would never see her planet again and he would never see her again.

If it were possible he would smuggle himself on the robot and return to Earth himself, but there was neither room nor life support systems aboard. Sadly, he adjusted the instrumentation for the return trip, retreated to the workdome, and watched the little ship take off.

When a week had gone by he began to feel more confident. Perhaps he was immune. Maybe his body had time to develop antibodies. He carried on the work of the expedition as well as he could, going farther and farther from the camp each day to gather new samples of flora and dirt. Then he would test and categorize them, though he was not familiar with all the procedures. He wished the others were there. Sometimes he would go out and stand by their graves.

"I think I'm not going to get sick," he told headquarters one morning. "I think I've developed an immunity to it. Can I come back?"

Space whispered its secrets in the receiver and then a voice from headquarters said, "Report daily, same time. We will come to collect

you in two months, fourteen days, Earth time."

"I said I think I'm immune!" He found that he was yelling into the microphone and he could imagine them wincing back at headquarters so he took a deep breath and said, "Perhaps you could send another robot for a sample of my blood. Test it for immunity. Then I could come home."

Space whispered longer. Only the yellow lights on the console assured him they had not cut him off. Benj rubbed his cheek and realized that he had forgotten to shave. He was glad they had not brought a video console. Finally a voice returned.

"Another robot scout beyond budget. We will pick you up as scheduled. Report daily, same time."

The yellow light blinked off. Benj kicked the console and then immediately tried it out to make sure he did not break anything. He got out the sled and went farther than he had ever travelled before on Ariel. He threaded his way through the hills and remembered on the astromaps a small lake several kilometers farther on and towards the south. They would have explored there by now if it weren't for the disease.

The lake was a very pale blue, shaped like an irregular pear, and apparently fed by rain since no stream entered or left it. A kind of grass grew right up to the edge in most places and across the lake the land rose to a plateau that stretched as far as he could see. Back at the camp there was an inflatable raft along with probing and diving equipment, but he had not brought them along. He parked the sled, took off his weighted shoes, and bounded lightly over the grass to the water's edge. The water was cool. It reminded him of his childhood days in camp when in the free period on Sundays some of them would go to the lake in the adjoining Nature Park and swim. The water was cool there too, but the first ones in always said it felt great when you got used to it and Benj would run in and flop about in the water.

He got undressed and stepped into the water up to his ankles, probing with his foot for soft spots or a drop-off. He also looked carefully for any signs of life. He could see none but there were sample jars on the sled and he would take back some of the lake water to examine. He stepped in a little deeper. The knees, he remembered, and then the groin, were the most delicate parts. He stepped in up to his waist, waited until the water no longer seemed chilly, and then dove in and swam.

He swam all the way across the narrow part of the lake, but he was too tired to swim back so he got out and lay down on the soft grass to rest. When he woke up, the short Ariel day was almost gone. Not sure he could swim back across the lake, he decided to hike around it at the stem end, but before he was half way back, the sun sank behind the hills

and the moonless Ariel night sky cloaked him in darkness.

He went on for a while and then, afraid he was getting lost, he stopped and knelt in the grass. A million stars shined like tiny spotlights searching the universe for him. Benj laughed at the idea. One of those stars, perhaps, was Sol and another was almost certainly Kappa. He stretched out on the grass and wished that Kolcha were with him. When he closed his eyes he could almost feel her in his arms. Softly he rolled over and recoiled when his hardness jabbed the ground.

It was chilly and it was going to get colder before the night was over. Humans, he had read, were once able to start fires by rubbing sticks together on dry leaves. He always wondered if that were true, but he had neither sticks nor dry leaves to find out. Worried that he would catch some disease if not the one that got the others, he peered into the darkness until he thought he saw the lake. Then he walked carefully in that direction and was overjoyed to find water. Now he followed the shoreline until he came to his clothes. He was still cold, but dressed now he could survive the night. He was glad there were no wild animals on Ariel.

When morning came he woke up, but drowsed off again before finally getting up. His stomach seemed to plead for food and he remembered that he hadn't eaten for almost a day. Getting back to camp would take more than an hour and there was no food on the sled so he explored a little where the hills began and discovered bushes with dark blue berries growing on them. He tried one. It tasted like a blueberry. He waited for some adverse reaction, but feeling none he ate a few more and gathered up another bunch to take back to the camp. He drove the sled slowly, looking out for more food, and against the side of the hill he spotted a vine with pods hanging from it. When he popped one open he discovered small red beans. He chewed one. It did not taste good, but it did not seem to make him sick so he gathered some of those too to take back.

AN ODD buzzing sound disturbed his thought as he worked his way out of the hills. At first he thought it might be a swarm of bees, but then he remembered that he had not reported in yet for the day and headquarters must be calling. The two domes of the base camp came into view like pimples on the bare ground and he steered for it and the buzzing of the transceiver.

"Sorry I'm late," he blurted into the microphone. "I was out exploring."

"Next time take the portable sender with you."

"Yes, sir."

The yellow light went off before he could tell them about the berries. Every day Benj would go out and explore the hills, finding new

varieties of berries and another kind of bean. Back at camp he would analyze them, store some in the sample pouches, and experiment with mixing them into the basic foods the expedition had brought with them. He even found some spices, a kind of grass with a lemony taste, and a bush whose leaves when crushed gave off a hint of licorice. Some nights he would camp out at the lake or bring a picnic lunch and a book there. It was summer on Ariel and as long as he had to wait until the three months were up he felt he was entitled to take advantage of it.

One day, not having discovered anything new in the hills, he decided to begin exploring the plateau on the other side of the lake. It was difficult to find a way up, but finally, on a slanting, switch-back course, he coaxed the sled to the top. Robot satellite photos had not shown anything remarkable up there, and as he gazed across the sparsely vegetated expanse of dirt he wondered if, in fact, it were worth exploring. As long as he was up there, however, he decided to give it a try. Some of the weeds looked different from any he had seen below. When he examined them closely he saw that they had little kernels on them very much like wheat. He gathered a pouchful, but his next discovery made him forget about the wheat. In about the middle of the plateau there was an area where no weeds or grass or vegetation of any kind grew. The ground there was different too. A large oval patch was burned into the dirt. Pebbles were scorched and the soil looked as if it had been tarred. He touched it gingerly. It was not warm. He gathered up samples to take back to camp and sped back to the work dome as fast as he could.

Tests showed that the soil sample was slightly radioactive, but he didn't have instruments sophisticated enough to tell him any more. The sample would have to go back to Sol-3 or Kappa-2 for further analysis. He wondered if this would get them to send for him sooner.

He lay in his bunk that night thinking of how this new discovery would bring him some company soon and how he should report it to make sure they understood at Headquarters the full import of his discovery. In a few days, he thought, he would have someone to talk to besides a faceless voice once a day over his transceiver. One thing he planned to ask for, though he knew it was sentimental — he wanted them to take the bodies back, Kolcha's to Kappa-2 and the others to Sol-3. At least Kolcha's, because on Kappa-2 there was still ceremony and burial when someone died and her relatives would want that. The others didn't really matter. Dead bodies were routinely pyrolyzed. Perhaps he would just ask that Kolcha be returned home.

"I've made an amazing discovery," Benj shouted into the microphone the next day.

"You're speaking too loud," replied the voice from Headquarters.

"Sorry." He told them what he had discovered and waited for some

sign of excitement at the other end.

"Very interesting."

"Send a ship."

"We will see. We will report your find."

"But I have no one to talk to."

"You have vidtapes. Report tomorrow, same time."

The yellow light went off and Benj kicked the console, twisting his ankle when his shoe glanced off the handle of the modular repair panel. He hopped about the room while at the same time trying different switches to make sure he had not broken anything. It would be just my luck, he thought, to break it and then I wouldn't even be able to talk to Headquarters. Everything seemed to be working.

Of course, he thought, talking to Headquarters isn't much better than talking to myself. "In fact," he said out loud, "it isn't as good." To prove it he decided to take the day off and go out to the lake. He packed a lunch and on the way he stopped and gathered berries to add to it. "I wish there were birds on Ariel," he said, spreading his thermoblanket on the grass. Then he thought about the universe that might have been. Why can't worlds get along without wars, he wondered. He had himself been wounded in the Delta campaign and though he recovered, that was the reason he was able to get his present non-combat status. If he went back, he might be returned to active duty. He also hated what happened to subject planets, the way they treated the people of Kappa-5, or Sweezio, as the natives there sometimes still called it, as Kolcha called it when they were alone. Benj got undressed and went in for a swim.

The sun glided overhead and Benj's stomach demanded food. He was out in the neck of the lake and rather than swim back he decided to walk so that he would have time to dry off before getting back into his uniform. He remembered how he had to feel his way back in the dark the first time he came to the lake. Now he could see clearly. He began to jog. In the light Ariel gravity each step became a graceful leap with very little effort. He could be disciplined for that if anyone caught him and he looked around in some conditioned response to training and then felt foolish not for leaping naked over the Ariel grass but for looking around. "This is fun." It was almost like flying and when he got back to the sled he put his uniform on because it was chilly but he put the weighted shoes on the sled.

He awoke early the next morning and could not get back to sleep. An idea had come to him during the night, a dream which did not vanish when he opened his eyes, but one he continued to contemplate as the dark sky outside the dome's window turned gray. In it he was alone on Ariel as he had been in many dreams since the crew died, but it was not frightening any more. Instead, he lived a life that on Sol-3 was scornfully

called leisure. He watched vidtapes and wrote poems and when he needed to talk he summoned up Kolcha or old Sol-3 friends in his mind. And someday . . . The alarm went off. It was time to get up and report to Headquarters.

Benj stared at the microphone. If he reported in every day they would pick him up in two more months, but if he did not report they would think he was dead. Then they would think the planet was still contaminated. They might not come back for years. This corner of the universe, he knew, did not have a high priority back at Headquarters. Not to report, however, was disobeying orders. His hand reached out, but he held it back and then he forced himself away from the set.

When his report was exactly five minutes late, the yellow light went on and a moment later the buzzer sounded, loud enough to be heard all over the planet. He turned the volume down, wondering if they could tell back at Headquarters that he had done that. He would have turned it off but only acknowledging the incoming message would do that, so he went to the Domicile where it could just barely be heard. He played some music and that drowned it out altogether.

Each morning he came to the Workdome to watch the yellow light go on and hear the buzzer summon him to listen to a message. He could imagine what they were saying back there. The first day: *The fool must be out exploring and forgot his sender again.* The second day: *Why doesn't he answer?* Third day: *He must have Ariel's disease. I knew it would get him sooner or later.*

After five days Headquarters gave up. Benj lay in his bunk waiting for the buzzer like someone who wakes up moments before the alarm clock goes off. When nothing happened he got up anyway and went to the Workdome to make sure. The yellow light was not on, the console sat quietly in its space. He felt like cheering, but contented himself with a sigh. They don't care for very long, he thought.

THERE WERE days when he felt he had made a mistake, times when he would go to the Workdome and finger the sending switch on the transceiver console. He could always say that he was sick and unable to get to the set when it buzzed for him. One day, to make sure he did not do that, he kicked in the console. "Last chance," he said. His fingers touched the switch and he imagined the ship coming for him, the trip back, Sol-3. He looked at his uniform. There was a hole in his right sleeve where one day in the hills he had slipped and torn it against a rock. A patch of berry juice on his chest seemed to mock the i.d. badge next to it. His feet were bare. He put on a weighted shoe and then kicked out once, twice, again and again until the console rattled. Carefully he tried the sender switch, whispering into the microphone. No lights went on, no dials waved. He went outside to the sled and



turned the portable sender on, tuning it to the base camp transceiver and then he went back inside. The yellow light was not on.

"That was fun," he said, going back to the Domicile to make dinner.

It turned autumn on Ariel. The wheat up on the plateau was ripening. Benj went everyday to stand by the dark oval and look up at the sky, though he knew the skyscan would spot an approaching ship long before he could see it. Perhaps I am being watched, he thought, as he gathered the wheat. He made sure to leave enough to reseed itself.

When he finished grinding the wheat and separating out the chaff, he had little more than three kilograms of flour. Next year there will be more, he thought. He had never made bread before but he had read about it. He added water to his flour to make dough and then, he knew, he needed yeast, but would have to do without it. He formed the dough into a loaf in a pan he made out of one of the panels off the transceiver console and then he set it aside. By evening it had risen. There were wild yeasts in the Ariel air.

As the bread baked he wished there were still families as there were in the old days. He had seen pictures of families and imagined himself now with a wife and children of his own. "Kolcha, dear, shall we take the children to the Nature Park today?"

Later, while he was eating the bread, a wild thought occurred to him. "That's it," he said, "the disease is not carried by a bacteria or a virus, it's carried by the yeast." And I, he thought, taking another bite, am immune. I wonder if they introduced the yeast too.

Two nights later the skyscan sounded its piercing alarm. Benj leaped out of bed and ran to the Workdome to shut it off. The information on the screen indicated that it would be over an hour yet before it entered Ariel's atmosphere. Say it makes a pass or two over the planet, Benj calculated, it would be about two hours before it landed. The skyscan could identify the source of any ship known to it, but it would have to be closer than this one was; under source on the screen it still said *unknown*, but a little later that changed to Sol. "Damn you!" Benj shouted.

As dawn spread through the Ariel sky Benj spotted the ship with the scanoculars. It was a silver point that seemed to fatten as it approached the planet. Benj did not know what to do. *They must be coming because of his report of the other landing.* "Damn it! What will they do when they discover I'm not dead?" If they took him back to Sol-3 and extracted from his blood the secret of immunity to the disease, an expedition would then be sent to Ariel to colonize and exploit it. Benj decided to hide. The point grew into an oval shape and changed course. He saw that it was going to circle the planet before landing. That gave him time to pack some food and get into the hills.

The ship was low enough now for Benj to see its markings. Flashes of

light shot out of it as it slowed up and stabilized. The noise followed the flashes to the ground, but it was not deafening the way it was in the old days. The ship circled Ariel once more and Benj made it to Lookout Hill.

The ship hovered over a spot about a kilometer away from the domes, holding itself up on a pillow of forced air. Then, as if the pillow had developed a slow leak, the ship settled with just the barest wobble, to the ground. It was a scout. Benj already knew that from the Skyscan. Through the scanoculars he watched the entry way slide open and the two scouts come out. They looked fierce in their black isolation suits. One of them held a weapon ready, the other took out a pair of scanoculars and surveyed the planet. Benj ducked down and then slid backwards off the crest of the hill.

When he looked again the scouts were not in sight, but using his own scanoculars he saw something move in a window of the Domecile. "Get out of there!" he yelled. He felt as if he had been locked out of his own home. In a little while the scouts emerged and one of them was using scanoculars again. Benj hugged the ground. The scouts went into the ship and soon a voice boomed out of its speakers: "*Benj 1-93647, where are you?*"

Do they know I'm alive, he wondered. Perhaps they found something in the Domecile that gave me away.

"*Benj 1-93647, can you hear us?*"

They can't be sure, he thought. And they certainly don't want to catch the disease.

"*1-93647, report to us at once!*"

He remembered when a command like that would bring him running. "Try and find me," he whispered. He backed away from his position and found a culvert deep in the hills where he had his lunch.

He was resting when a familiar sound zipped through the hills. It was the sled. Scrambling to the top of the nearest hill, Benj followed the sound and saw one of the black-uniformed scouts riding the sled through the passes and valleys. Every once in a while the man would raise himself up and look around. Once he stopped the sled and began speaking into the sender, shaking it and examining it and speaking into it again. He was trying to communicate with the other man back at the domes, but Benj had done too good a job on the communications console. Benj laughed as he watched the sled turn around and go back.

The next day he heard the sled again. He had camped in a culvert near Lookout Hill and he was out gathering berries for breakfast when the sled buzzed by not more than five meters from where he stood. He climbed to the top of the hill just in time to see the sled emerge from the hills and head for the lake. Benj wondered what he was doing. He watched the sled pull up. The scout consulted something, looked

around, and then took off again towards the short end of the lake.

"*He's going to the oval!*" Benj did not want Headquarters to learn any more about the others. He was sorry he had told them about the site in the first place. "Damn the sled!" He took off, running as hard as he could towards the plateau.

EVEN WITH the light Ariel gravity that made running more like gliding, Benj was out of breath when he reached the plateau. He rested only a moment and then climbed to the top. The sled was at the oval. Benj could see where it had trampled its way through the wheat and he watched in agony as the scout probed the charred soil. By the time Benj felt his strength return, the scout had scooped up samples of soil and was looking around the site. Benj wondered if the scout would wander far enough from the sled to permit him to rush in and steal it. He watched for a chance, but the scout never went far enough so Benj thought of another plan.

"Hey!" he yelled, standing up and waving his arms so the scout could not miss seeing him. "Get away from there!"

He was not sure if his voice carried that far, but the scout stopped what he was doing and looked towards Benj. Then he got the scanoculars out of the sled and looked towards Benj again.

"Hey, Number. Come and get me!"

The scout mounted the sled and rode it towards him. Benj scrambled down the plateau and half way out towards the lake. He was hoping the scout would wreck the sled coming down the plateau, but it buzzed and skidded down and made it to the meadow where Benj was already running towards the water.

Benj dove in and swam across the neck of the lake. He was almost into the hills when the sled came around the lake, homing in on him.

He had to rest. He was deep in the hills and he heard the sled trying the valleys all around him. He found a hole in the hillside and huddled up inside it. The sled buzzed up and down the valley, sometimes climbing the hills, tearing up berry bushes and ripping through bean vines. He had to get rid of it. He made his way to the edge of the hills nearest the camp, took a deep breath, and walked out on the plain. He saw the scout up on Lookout Hill scanning the planet. He almost fell over when he spotted Benj, and soon the sled was buzzing and ripping down the hillside. Benj took off towards the domes.

He ran easily at first, remembering when the hard ground used to hurt his feet. Now his feet were as tough as the hard ground on which he ran. He let the sled close to within fifty meters, exulting in the knowledge that he could run faster if he wanted to, could probably run as fast as the sled. He veered towards the graves. The four low mounds lay directly in front of him and the open grave he had dug for himself

only now became visible. He speeded up and in a flying leap cleared the pit and Kolcha's grave together. Then he slowed down again, just jogging for another eight or nine meters until the buzzing sound snapped off. He turned and saw the tail of the sled sticking straight up out of the grave. The driver had been thrown clear and lay curled up between Benj and the wrecked sled. Benj started to approach him. The scout stirred and Benj backed away. The sun was behind Benj now. His shadow reached out almost to where the black-suited driver lay.

"Do you need help?" Benj asked.

The scout looked up at him. The sun glinted off the plastic eyeshield and the driver appeared to reach out.

Benj came nearer. "Are you hurt?" he asked.

"Get away from him!"

The voice came from behind him. Benj whirled and saw the other scout. He had his weapon out and was using it to wave Benj away from the hurt scout.

"Shall I help you carry him to the ship?"

"Get away!" The voice, coming through the face shield of the isolation suit, had an odd, strained quality about it. It scratched at Benj's nerves.

"Well, let me know if you want help."

"You think we want to catch what you've got?" He waved the weapon more threateningly.

Benj danced away. He understood now. With the perspiration on his bearded face and his rumpled hair and his torn uniform he must have looked as if he were in the last stages of Ariel's disease. The scout would have to take his comrade out of his isolation suit to see how badly he was hurt, and he was probably not sure he wouldn't catch the disease even in his own isolation suit.

"All right," Benj said. He kicked at the dirt and then ran lightly off towards the hills. Stopping close enough to watch them, he sat down cross-legged on the plain. Half an hour passed before the one scout managed to drag the other back to the ship. Benj did not move. The sun was at the horizon now. Against it Benj watched the ship lift itself up on its pillow of air and then shudder as it shook free from the planet and headed into the night full of stars.

Benj watched until he could see it no more. Then he returned to home sweet dome. As he was cleaning up he wondered how long it would take him to disassemble the dome and move it up to the plateau. You can talk to people who plant wheat, he thought. ●

AMAZING FACTS



The DNA Dilemma; solved

Modern microbiology revolves around a tiny bacterium known as *Escherichia coli* (*E. coli*), discovered by a German pediatrician named Theodore Escherich. *E. coli* bacteria inhabit the human colon, are mostly harmless, but can cause some diseases. They have been used in the laboratory to study the messenger, transfer and production systems of the cell.

The story of recombinant DNA began in the 70's when scientists discovered how to transfer genetic material from other organisms into the single-celled *E. coli* bacteria. *E. coli* gives up its genes very easily and will recombine with genes from a variety of viruses and other organisms. It was feared that the mutated *E. coli* might unwittingly be given dangerous properties and might escape from the laboratory, spreading rapidly among the natural bacterial population, causing disease and ecological havoc of disastrous proportions.

The threat was clear. A new, weak-

ened strain of the *E. coli* bacterium had to be found. *E. coli* "K-12" was the answer, but doubts were still raised about its possible survival beyond the lab. Microbial geneticist Roy Curtiss and his team in Birmingham, Alabama stepped in and devoted a year to developing *E. coli* "chi 1776," a strain that cannot survive at all without special chemicals supplied in the laboratory. Curtiss subsequently studied *E. coli* K-12 in order to determine its safety; the outcome was positive.

The way was cleared for safe research, and the potential benefits are many. The ability of *E. coli* to accept genetic information from other organisms will make it possible to create new forms of bacteria that can offer immense good for all mankind. Just a sampling:

Antibiotics: A range of microorganisms could be created to produce a new generation of antibiotics useful in fighting gonorrhea, strep throat and bacterial meningitis.

Hemophilia: The blood-clotting factor missing in hemophiliacs could be supplied by *E. coli* re-combinants with the genetic information for clotting.

Insulin: *E. coli* combined with information for insulin production will make it possible to grow human insulin in the bacteria, instead of relying on production of insulin in pigs.

Viral Control: Viruses may be used to make genetic changes in humans or in any developed multicellular organisms. A virus could be induced to accept a fragment of genetic material that helps combat a certain disease. It would then be used to infect the specific cells susceptible to that disease, thus making them genetically immune. ●

HENRY CURRAN was big, busy and impatient of triflers. He had the build of a wrestler, the soul of a tiger, and his time was worth a thousand bucks an hour. He knew of nobody who rated more.

And crime did not pay? Bah!

Jungle tactics paid off. The entire opposition had been conditioned out of men by what is called civilization.

Entering his spacious office with the swift, heavy tread of a large man in fighting trim, Henry slung his hat onto a hook, glanced at the wall-clock, noted that it registered ten minutes to twelve.

Planting himself in the seat behind his desk, he kept his expectant gaze upon the door through which he had entered. His wait lasted about ten seconds. Scowling at the thought of it, Curran reached over and thumbed a red stud on his big desk.

"What's wrong with you?" he snapped when Miss Reed came in. "You get worse every day. Old age creeping over you or something?"

She posed, tall, neat and precise, facing him cross the desk, her eyes wearing a touch of humility born of fear. Curran employed only those about whom he knew too much.

"I'm sorry, Mr. Curran, I was —"

"Never mind the alibi. Be faster — or else! Speed's what I like. Speed — see?"

"Yes, Mr. Curran."

"Has Lolordo phoned in yet?"

"No, Mr. Curran."

"He should be through by now if everything went all right." He viewed the clock again, tapped irritably on his desk. "If he's made a mess of it and the mouthpiece comes on, tell him to let Lolordo stew. He's in no position to talk, anyway. A spell in jail will teach him not to be stupid."

APPOINTMENT at NOON

by Eric Frank Russell

Who would be so pushy about keeping an appointment with an overly busy tycoon? And who could be so irritatingly cool about it?



"Yes, Mr. Curran. There's an old —"

"Shut up till I've finished. If Michaelson calls up and says the Firefly got through, ring Voss and tell him without delay! That's important!" He mused a moment, finished, "There's that meeting downtown at twelve-twenty. God knows how long it will go on but if they want trouble they can have it aplenty. If anyone asks, you don't know where I am and you don't expect me back before four."

"But, Mr. Curran —"

"You heard what I said. Nobody sees me before four."

"There's a man already here," she got out with a sort of apologetic breathlessness. "He said you have an appointment with him at two minutes to twelve."

"And you fell for a gag like that?" He studied her with open contempt.

"I can only repeat what he said. He seemed quite sincere."

"That's a change," scoffed Curran. "Sincerity in the outer office. He's got the wrong address. Go tell him to spread himself across the tracks."

"I said you were out and didn't know when you would return. He took a seat and said he'd wait because you would be back at ten to twelve."

INVOLUNTARILY, BOTH stared at the clock. Curran bent an arm, eyed his wristwatch by way of checking the accuracy of the instrument on the wall.

"That's what the scientific bigbrains would call precognition. I call it a lucky guess. One minute either way would have made him wrong. He ought to back horses." He made a gesture of dismissal. "Push him out — or do I have to get the boys to do it for you?"

"That wouldn't be necessary. He is old and blind."

"I don't give a damn if he's armless and legless — that's his tough luck. Give him the rush."

Obediently she left. A few moments later she was back with the martyred air of one compelled to face his wrath.

"I'm terribly sorry, Mr. Curran, but he insists that he has a date with you for two minutes to twelve. He is to see you about a personal matter of major importance."

Curran scowled at the wall. The clock said four minutes to twelve. He spoke with sardonic emphasis.

"I know no blind man and I don't forget appointments. Throw him down the stairs."

She hesitated, standing there wide-eyed. "I'm wondering whether —"

"Out with it!"

"Whether he's been sent to you by someone who'd rather he

couldn't identify you by sight."

He thought it over, said "Could be. You use your brains once in a while. What's his name?"

"He won't say."

"Nor state his business?"

"No."

"H'm! I'll give him two minutes. If he's panhandling for some charity he'll go out through the window. Tell him time is precious and show him in."

She went away, brought back the visitor, gave him a chair. The door closed quietly behind her. The clock said three minutes before the hour.

CURRAN LOUNGED back and surveyed his caller, finding him tall, gaunt and white-haired. The oldster's clothes were uniformly black, a deep, somber, solemn black that accentuated the brilliance of the blue, unseeing eyes staring from his colorless face.

Those strange eyes were the other's most noteworthy feature. They held a most curious quality of blank penetration as if somehow they could look into the things they could not look at. And they were very sorry — sorry for what they saw.

For the first time in his life feeling a faint note of alarm, Curran said, "What can I do for you?"

"Nothing," responded the other. "Nothing at all."

His low, organlike voice was pitched at no more than a whisper and with its sounding a queer coldness came over the room. He sat there unmoving and staring at whatever a blind man can see. The coldness increased, became bitter. Curran shivered despite himself. He scowled and got a hold on himself.

"Don't take up my time," advised Curran. "State your business or get to hell out."

"People don't take up time. Time takes up people."

"What the blazes do you mean? Who are you?"

"You know who I am. Every man is a shining sun unto himself until dimmed by his dark companion."

"You're not funny," said Curran, freezing.

"I am never funny."

The tiger light blazed in Curran's eyes as he stood up, placed a thick, firm finger near his desk-stud.

"Enough of this tomfoolery! What d'you want?"

Suddenly extending a lengthless, dimensionless arm, Death whispered sadly, "You!"

And took him.

At exactly two minutes to twelve. ●

THE PERFECT WOMAN



Illustrated by Scott Mavor

by Robert Sheckley

Ah, the price we all must pay for perfection! Here is an early example of Sheckley's inventive, slightly wacky view of the future.

MR. MORCHECK awoke with a sour taste in his mouth and a laugh ringing in his ears. It was George Owen-Clark's laugh, the last thing he remembered from the Triad-Morgan party. And what a party it had been! All Earth had been celebrating the turn of the century. The year Three Thousand! Peace and prosperity to all, and happy life . . .

"How happy is your life?" Owen-Clark had asked, grinning slyly, more than a little drunk. "I mean, how is life with your sweet wife?"

That had been unpleasant. Everyone knew that Owen-Clark was a Primitivist, but what right had he to rub people's noses in it? Just because he had married a Primitive Woman . . .

"I love my wife," Morcheck had said stoutly. "And she's a hell of a lot nicer and more responsive than that bundle of neuroses you call your wife."

But of course, you can't get under the thick hide of a Primitivist. Primitivists love the faults in their women as much as their virtues — more, perhaps. Owen-Clark had grinned ever more slyly, and said, "You know, Morcheck old man, I think your wife needs a checkup. Have you noticed her reflexes lately?"

Insufferable idiot! Mr. Morcheck eased himself out of bed, blinking at the bright morning sun which hid behind his curtains. Myra's reflexes — the hell of it was, there was a germ of truth in what Owen-Clark had said. Of late, Myra had seemed rather — out of sorts.

"Myra!" Morcheck called. "Is my coffee ready?" There was a pause. Then her voice floated brightly upstairs. "In a minute!"

Morcheck slid into a pair of slacks, still blinking sleepily. Thank Stat the next three days were celebration-points. He'd need all of them just to get over last night's party.

Downstairs, Myra was bustling around, pouring coffee, folding napkins, pulling out his chair for him. He sat down, and she kissed him on his bald spot. He liked being kissed on his bald spot.

"How's my little wife, this morning?" he asked.

"Wonderful, darling," she said after a little pause. "I made Seffiners for you this morning. You like Seffiners."

Morcheck bit into one, done to a turn, and sipped his coffee.

"How do you feel this morning?" he asked her.

Myra buttered a piece of toast for him, then said, "Wonderful, dar-

ling. You know, it was a perfectly wonderful party last night. I loved every moment of it."

"I got a little bit veery," Morcheck said with a wry grin.

"I love you when you're veery," Myra said. "You talk like an angel—like a very clever angel, I mean. I could listen to you forever." She buttered another piece of toast for him.

MR. MORCHECK beamed on her like a benignant sun, then frowned at her. He put down his Seffner and scratched his cheek. "You know," he said, "I had a little ruck-in with Owen-Clark. He was talking about Primitive Women."

Myra buttered a fifth piece of toast for him without answering, adding it to the growing pile. She started to reach for a sixth, but he touched her hand lightly. She bent forward and kissed him on the nose.

"Primitive Women!" she scoffed. "Those neurotic creatures! Aren't you happier with me, dear? I may be Modern — but no Primitive Woman could love you the way I do — and I adore you!"

What she said was true. Man had never, in all recorded history, been able to live happily with unreconstructed Primitive Woman. The egoistic, spoiled creatures demanded a lifetime of care and attention. It was notorious that Owen-Clark's wife made him dry the dishes. And the fool put up with it! Primitive Women were forever asking for money with which to buy clothes and trinkets, demanding breakfast in bed, dashing off to bridge games, talking for hours on the telephone, and Stat knows what else. They tried to take over men's jobs. Ultimately, they proved their equality.

Some idiots like Owen-Clark insisted on their excellence.

Under his wife's enveloping love, Mr. Morcheck felt his hangover seep slowly away. Myra wasn't eating. He knew that she had eaten earlier, so that she could give her full attention to feeding him. It was little things like that that made all the difference.

"He said your reaction time had slowed down."

"He did?" Myra asked, after a pause. "Those Primitives think they know everything."

It was the right answer, but it had taken too long. Mr. Morcheck asked his wife a few more questions, observing her reaction time by the second hand on the kitchen clock. She was slowing up!

"Did the mail come?" He asked her quickly. "Did anyone call? Will I be late for work?"

After three seconds she opened her mouth, then closed it again. Something was terribly wrong.

"I love you," she said simply.

Mr. Morcheck felt his heart pound against his ribs. He loved her!

Madly, passionately! But that disgusting Owen-Clark had been right. She needed a checkup. Myra seemed to sense his thought. She rallied perceptibly, and said, "All I want is your happiness, dear. I think I'm sick . . . Will you have me cured? Will you take me back after I'm cured -- and not let them change me — I wouldn't want to be changed!" Her bright head sank on her arms. She cried — noiselessly, so as not to disturb him.

"It'll just be a checkup, darling," Morcheck said, trying to hold back his own tears. But he knew — as well as she knew — that she was really sick.

It was so unfair, he thought. Primitive Woman, with her coarse mental fibre, was almost immune to such ailments. But delicate Modern Woman, with her finely balanced sensibilities, was all too prone. So monstrously unfair! Because Modern Woman contained all the finest, dearest qualities of femininity.

Except stamina.

MYRA RALLIED again. She raised herself to her feet with an effort. She was very beautiful. Her sickness had put a high color in her cheeks, and the morning sun highlighted her hair.

"My darling," she said. "Won't you let me stay a little longer? I may recover by myself." But her eyes were fast becoming unfocused.

"Darling . . ." She caught herself quickly, holding on to an edge of the table. "When you have a new wife — try to remember how much I loved you." She sat down, her face blank.

"I'll get the car," Morcheck murmured, and hurried away. Any longer and he would have broken down himself.

Walking to the garage he felt numb, tired, broken. Myra — gone! And modern science, for all its great achievements, unable to help.

He reached the garage and said, "All right, back out." Smoothly his car backed out and stopped beside him.

"Anything wrong, boss?" his car asked. "You look worried. Still got a hangover?"

"No — it's Myra. She's sick."

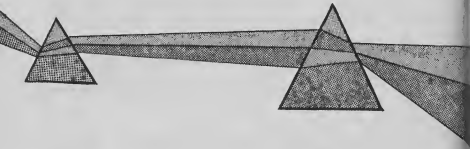
The car was silent for a moment. Then it said softly, "I'm very sorry, Mr. Morcheck. I wish there were something I could do."

"Thank you," Morcheck said, glad to have a friend at this hour. "I'm afraid there's nothing anyone can do."

The car backed to the door and Morcheck helped Myra inside. Gently the car started.

It maintained a delicate silence on the way back to the factory.

THE SPECTROSCOPE



by Robert H. Wilcox

Robert Wilcox introduced the first SF literature course to be offered at Glendale Community College in Phoenix, Arizona, and he has written a text book on the subject. The following analysis is what you might hear, were you to sit in on one of his classes. Both readers and writers will enjoy his lively perspective on what goes into an effective piece of creative writing.

Probably most of us read more science fiction novels than any other form of that literature. The growth of SF paperbacks is good evidence that this is so, and such a conclusion offers a fine occasion to comment on our frame of mind when we read those longer works. Because they usually run in the neighborhood of 50,000 to 75,000 words, we greet them in special fashion. The plots may be simple, but the writers put much more detail,

many more incidents into their development. The characters are often itemized and complex. A great deal of space can be taken up in description and in philosophical commentary. All of these qualities create a roomy product, so we take our time in wandering through the words.

Such luxuries are not available to us when we read stories like those which appear in *Amazing* -- primarily because there simply is not room for expansive development. Most of the stories are quite short -- two in this issue are notably brief -- and we must examine them sharply or we might miss elements which are important to our understanding and enjoyment.

"The Perfect Woman" and "Appointment at Noon" are little gems whose polished facets deflect special pleasure to the reader because their brevity has forced the writers to take special pains with their construction.

An important design feature of each story is that only a tiny arena has been selected for the action. "The Perfect Woman" is played in a most unlikely setting -- the breakfast table. Our stereotyped view of breakfast is a hasty, grudgingly prepared and consumed meal. He usually lurks behind the morning paper; she timidly or tartly assumes her subordinate position tending the toaster. The atmosphere is decidedly unfriendly. But in this story we find a mate lavishing all sorts of attention upon her man. She is the last word in domestic desirability, a loving companion anyone would treasure. Notice, though, that this stage is very tightly restricted to the breakfast area.

The same economy of setting is found in "Appointment at Noon" -- the office of an apparent business tycoon, whose time is worth \$1000 an hour. Time is so important to this individual, in fact, that we feel at the outset that we must zip through our reading of this account very quickly so that we won't be overcharged.

In both cases the story deals with a very small stage, but one which is paramount to the action. To stress this, the author in a sense slows time so that we can observe details we might otherwise overlook. So Myra bustles about, pours coffee, unfolds napkins, pulls out Morcheck's chair, kisses him on his bald spot. Ordinarily, such trivial commonplaces might be omitted. In the same way, we observe in the other story that Curran uses jungle tactics, is in fighting trim, crouches at his desk to meet the next challenge, fairly radiates animal energy.

This slowing down so we can note such features makes us realize they are important; otherwise, the author

would not have included them. So they in effect prime us, get us ready for what is to come. We begin to ask questions. Why is Myra so attentive, so different from the wife who has been standardized on TV? How is it that Curran charges into an office as though he is ready to tangle with life itself? Isn't office work just routine? It's important that we generate this attitude of inquiry so that we can fully enjoy such short reading adventures.

Note, also, how few people are on that small stage -- only two in one case, and the count is a bit uncertain in the other. Such a limited cast forces our concentration; there is no doubt these players are important, and we scan them very carefully. We come to expect a long list of people in novels -- most of them are only spear-carriers, and we can quickly sort out the ones who are crucial to the development. But in these two small works of art nothing goes to waste. Even the char-



acters' names go to work. Morcheck, we learn, can afford a very expensive luxury -- as the name suggests -- or that he is "picky" about his possessions. Myra is utterly devoted to him, so it's not difficult for us to stretch her name into "admire" or something like that. Curran is a veritable dynamo as he is sketched, and his name lends fierce energy to the story from the start.

Probably the most useful quality in each of these stories, however, is what is called a gimmick. The gimmick may be a personality trait, a machine, a quality in the environment -- such as reduced gravity. Whatever it is, the author chooses it for very ancient Greek reasons. Some 2500 years ago when plays were put on under open sunny skies, Greek playwrights often solved difficult staging problems by resorting to the gimmick -- only they called it *Deus ex Machina*. This was a contrivance which swept across the stage, manipulated by ropes and pulleys, to remove an unwanted character from the action. It was a handy device because the audience accepted it as coming from the gods. The gimmick is something like that. It accomplishes for an author something which he would have great difficulty in pulling off if he were not to use it.

The gimmick in "The Perfect Woman," believe it or not, is the reader. All of us, being human, expect the characters to be like us. We are charmed, perhaps, by Myra's affectionate behavior and wish we were married to one like her. Some of us might be outraged that a woman would be expected to be so servile. Either way, we help the author to pull off his smashing ending as Myra goes back to the factory for recycling. The



writer has used our stereotyped attitudes as his gimmick, and in a way makes us do a great part of his work.

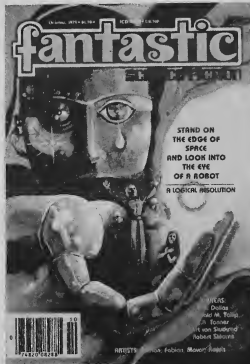
The same sort of thing occurs with "Appointment at Noon." We are set up by a description of a high-powered individual, bursting with energy, whose time is literally money. We become impatient along with him that phone calls have not occurred, that expected information is not immediately available. When he grudgingly grants a two-minute interview to an unknown caller, we fully anticipate the importance of this person. And when we find out just how important this meeting is, we smile ruefully at our part in creating the final shock.

Such close examination of stories can be made only if we are willing to "tune in" our critical faculties, almost as if we were using an instrument. In the case of these two yarns we have

scanned them at very close range. Our lens and grid measure have allowed us to note the tiniest details, to admire the structural artistry which contributes to our understanding of the writing. Without this willingness the words may be like the wash of stars in the sky -- some pretty patterns here and there, but nothing that is very intelligible. The spectroscopist can enjoy those sky patterns, too, but their significance increases when he sets his eye to an instrument which

translates their twinkling into bands of color that betray the intimate nature and construction of those celestial wonders. Like the writer of science fiction the spectroscopist is a melange of fact and fancy. Words, the writer's tools, never really capture his innermost intentions; they merely get close. The same can be said of one who analyzes a star. Precise as it is, his instrument will never more than approximate understanding of the objects of his attention. ●

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The Hylom Texts

by LaMonte H. Thompson

Illustrated by Raven

It is predicted by scientists that our world will again suffer cataclysmic geological change as has happened in the past — ice ages, floods, the eventual dying of our sun, etc. What would our descendants, who might

survive such catastrophies, experience on such a world? And would their descendants, in an even more distant future, be able to decipher what had happened?

FOREWORD

IN MAKING this translation I have used the Sirus University text of A.L. Otofit and N.O. Tanuf (2nd edition, 400), and have tried to follow the readings faithfully except in very few cases, viz.: In TI:11 I have taken BRONTE to mean bridge rather than the more usual command station. I have also included Tablet VIII which is not in the Sirus text. My source here was the *Col C Study Papers* by L.T. Snyder (first edition, 451).

Further, I have, in the interests of clarity and Comspeck usage, occasionally given common names instead of the elongated forms given in the text, ie, meat rather than *sacred-red-life* = *men-chew-hot* or *fish* rather than *creature-eaten-from-under-ice*.

I wish to thank the editors and staff of the Isaac Asimov Science Press for their sympathy and their support in this project; Dr. D.H. Hyde for reading the translation and offering his brutal criticism, and, mostly, Merium Cots for her devoted moral support.

INTRODUCTION

In this introduction I have tried to give the reader information which will help him to a more comprehensive understanding of the translation. "Information" concerning Hylom is mostly conjecture and argument: so I present solid facts and, in a few cases, my own ideas on the subject. I feel justified in doing such, in an introduction to a translation, because the reader should be aware of a translator's bias.

COL C

Col C is now recognized as the fifth planet in the Lorian system and is inhabitable without planet engineering. Scholars agree much of the life now found there is of Terran origin but certain species, alive and

extinct, are considered native to the planet. Present Homo Sapiens population is estimated at fifty million, approximately ten times the number of Hylom's time.

If is not certain if Col C was founded by a direct expedition from the Sol region or by another colony. The latter theory has gained much support in recent years but evidence is inconclusive for either side of the argument. Even the direct reference to the period of first colonization found in *The Hylom Texts* has proven only able to add to the confusion of the issue, due to the popularity of the name in that period of history. This argument may never be resolved until extensive archaeological work is done on Col C and its neighboring planets.

Col C is now the officially recognized name of the planet but in actuality it could be anything from Col VC to Col CV. Again, the records of this period are so sketchy to preclude any definitive answer to this question.

Rediscovery occurred during a mapping expedition by the independent ship, *Free Savant*, in the year 320. The subsequent expeditions, the bloodshed, and condition of the population at that time are such common knowledge, we will forgo these matters due to the limited space available for this introduction.

HYLOM

Hylom may be the only poet in history ever to gain popularity via official religious/political tracts. *The Hylom Texts* is the only work, so far discovered, which is not an officially sanctioned and directed piece. It also is the only work we have that does not limit itself to the dogmatic poetic structures of that period. We have no complete work of Hylom's but *The Hylom Texts* contain the largest coherent passages known to exist by the author.

The samples of Hylom's poetry we have are so fragmentary I find it sad to see them used in the Sensogram recordings for the purpose of humor. These were undoubtedly serious works intended to glorify the rulers and religions of the period and should not be used as baubles for the public's entertainment. Fortunately, *The Hylom Texts* is complete enough that the Sensogram companies have not been able to use it for their humorous recordings.

We are not certain exactly when Hylom lived, although it is certain it was several generations after first colonization. The Col C historian, Kramus, places Hylom four generations before his time which would place Hylom around 500 BSC. Most authorities believe this to be a very conservative estimate. My research would indicate between 800 BSC and 500 BSC would be possible.

We know Hylom was a poet but most people don't realize he was

also a scientist. Notes taken by his students are credited as the primary basis of empirical science on Col C until Rediscovery. As to the man himself we only have *The Hylom Texts* to guide us. This work also gives us a valuable look at the society of one period of mid-colonial Col C and a better understanding of why Col C is the only Col, so far rediscovered, that didn't productively grow or at least remain on a sophisticated level of civilization.

Though the copies we have of *The Hylom Texts* are in a poetic form, they are not similar in meter or style to any of his known works. Many scholars, I among them, believe the original version was in prose and subsequent generations attempted to change it into poetry. For this reason and for greater clarity to the modern reader I have written this translation in prose.

TRANSLATION OF THE HYLOM TEXTS

I am Hylom, a scribe for the royal treasury and temple of the city-state of Damus. I stole this tablet to write a message to those who shall follow me in the search for understanding. I dared to do this because at the beginning of the period there was light in the sky.

My world is one of darkness, bitter cold, and the magic of the Dots in the sky. We are a people of hunters which dare to fight the giant Tyranus. Our city-state is ruled by a royal bridge of five, the mystical number of the heavens. The other hand of power rests with the priests of the Dots. At the beginning of this period the Dots on the horizon of Dela began to disappear in the purple and crimson which ate up the darkness.

Already the bridge tells the people not to panic and the priests sing wise words without meaning. The people look to the sky, chant to the Dots, and wonder why the bridge asked them not to panic.

I remember stories from my youth about a time when there was a light in the sky. I was reared by my maternal grandfather, Hismus. He was a very old man when my parents fell before the giant Tyranus, which swallows men in glee. He told of a time when water flowed on the surface, of plants growing elsewhere than the tunnels, and of men sleeping above the ground. He told about strange animals which ate plants instead of meat and men. He was one of the ten, a group of elders which guided the young into service. From his stories, I believe, they were the ten that survived the change. He told no stories to others and only told me when he was old beyond measure.

A time of change is coming and the bridge and priests unite in fear. A change so tremendous that little of what we know shall survive. In place

of the Dots there will be a great circle of light, if my grandfather's stories are true. The ice will turn to water! (Praise to the wonder of the Dots.) Snow will leave the ground and it shall be naked for the eyes of men to see! Men won't fear every animal sound as a call to mortal combat. Maybe the change will be so drastic the priests and bridge will aground their power.

I, Hylom, do not fear the light in the sky. Hylom fears his fellow men. I now know there is a time of darkness and a time of light. I do not fear the change in the heavens but men who deny its possibilities.

To my posterity, I, Hylom say — watch not only the heavens but also watch those men in power.



TABLET II

The change is coming but much slower than I expected. The light grows brighter each period. At the beginning of this period the top of what my grandfather called 'a great circle of light' appeared over the Argo Mountains. It has been six hundred periods since the light first appeared on the horizon.

The light has eaten many Dots but trouble swells from the priests and the bridge. I have kept silent concerning the light in the sky and have avoided charges of heresy which have cost many of the educated their lives.

The people grow restless. Their ire is directed toward the bridge. I think they should be screaming at the priests, but then I have to work with the priests every period.

Janus was sentenced this period. He was sent naked to the surface for saying he believed the light in the sky was a Dot moving closer to the world. We know the Dots move, therefore I do not see his proposition as unreasonable. Janus gave me some of his studies on the Dots which indicate, mathematically, it is even possible to say our world may also move. May the priests never hear of my heresy.

Since my grandfather told me the light in the sky has come before, there may be a pattern to it. It must be a pattern taking many lifetimes to complete, but one that men with written records should be able to discern.

I, Hylom, fear the magic of writing may be lost if the change is too drastic. I have seen some of the sacred texts that the priests use in their chanting. These texts contain symbols from a time before men's collective memory and they may have been an earlier form of writing. Such symbols as $(dE/dS)/\sqrt{1-(dH/dS)^2}$ and $E=mc^2$ must've had more significance than the simple magic the priests use them for. We recognize the letters and symbols but are unable to put them into a meaningful relationship with one another. Is it possible that these symbols are a message to us from our past?

My grandfather was right about the animal movements. Already the hunters report the animals are moving away from the light. New ice holes have been started to increase the supply of fish. (Praise the Dots that water expands when it changes to ice.) Reports come in that hunters fight over kills, several have died. Hunters never have long arguments, just violent ones.

I heard one hunter say the light in the sky was dimmer further from the Argo Mountains. I kept quiet. Hunters also don't like discussions.

TABLET VI (TEXT INCOMPLETE)

The circle is complete! We are no longer sure of time, since the dots have left the sky, but I believe it has been 950 periods since the light first appeared in the sky.

We now have a Captain instead of a bridge ruling the city-state of Damus. The priests now chant to the light in the sky and believe the heresy of Janus.

I have found the tablets of the old priests. They contain many more symbols which no one now understands and stories which my father's generation must have based their religion. They are nothing like the stories my grandfather told. Many of the priests' stories tell of a Captain and a Crew. They say Captain was the leader of the mighty communities of Ship and Argo. Crew must have been a multi-talented man which followed Captain through all of his wonderings. They travel through a mysterious land called Space. (From the sound of it, the place was one still in darkness.) They found a new city-state called Col.

The stories also talk about their dreams — flying, talking over long distances, travelling at tremendous speeds, seeing through the ice to fish, and moving the clouds. Things that all men dream but these seem different. The wonder of magic fills the stories with awe and the everyday acceptance of the magic makes them believable. The stories say little of the light in the sky but do mention the dots. They tell about one dot . . .

TABLET VIII (TEXT INCOMPLETE)

There has been less carnage than in my grandfather's time but that was to be expected. His was the beginning of the darkness, ours the end. The warmth of the air and my grandfather's stories seem to calm the fears of men. However, the animals are gone. There still is violence.

The light has moved half its diameter in the sky. Our eyes hurt if we spend much time outside but . . .

. . . somehow she survived, even with that cavern she calls a mouth. Fortunately, for me, not many listen to the prattle of my wife or else I would have joined Janus on the surface.

I find I spend more time out of the family tunnel than ever before.



She's always blaming me for all the mouths to feed and keeps telling me to go back to the hunters. I don't think she even cares about the light in the sky or my studies. She either wants me in the cot or hunting. She even threw one of my tablets at me! I've moved to a lower tunnel in order to write in peace.

TABLET X

The circle of fire is one diameter above the horizon.

Hunters brought in fresh meat from the passes of the Argo Mountains. They say the herds follow the growth of the surface plants. My grandfather was mistaken about all the new animals being plant eaters. Hunters report blood was given to carnivores following the herd.

The meat tastes different from the flesh eater's meat but in time we shall grow used to it.

I have already seen some of the strange plant life. It is green! I have placed some of the tunnels' plants in the light. One plant lived and is changing color. It even started to grow faster. I believe the plants died of the cold and not of the light as some say. Is it possible our tunnel plants have not always grown just in the tunnels?

The water flowing in the canyon is refreshing to the eyes and mind. I am glad I am now a teacher, instead of a scribe, because I have more freedom to explore the wonders coming alive on the surface.

TABLET XVI

I am in my tunnel waiting for the water to find me.

The ice melted and water began to trickle down into the lower tunnels. We paid little attention to it. We were too busy caring for the burns caused by the light in the sky.

Much water flowed into the canyon, breaking up the remaining ice and moving the rocks. The sound was mightier than the roar of a Tyrannus in heat.

A short while ago the tunnels flooded. The entrance to my tunnel is blocked by rock.

I hear the agony from below.

There is water on the floor . . .

by G. Peyton Wertenbaker

Here is a story from the very first (April, 1926) issue of Amazing, written by a then precocious sixteen-year old, speculating on the macrocosmos. We are presenting the vintage mind-boggler along with its original illustration by Frank R. Paul.

THE MAN FROM THE ATOM

I AM A lost soul, and I am homesick. Yes, homesick. Yet how vain is homesickness when one is without a home! I can but be sick for a home that has gone. For my home departed millions of years ago, and there is now not even a trace of its former existence. Millions of years ago, I say, in all truth and earnestness. But I must tell the tale — though there is no man left to understand it.

I well remember that morning when my friend, Professor Martyn, called me to him on a matter of the greatest importance. I may explain that the Professor was one of those mysterious outcasts, geniuses whom Science would not recognize because they scorned the pettiness of the men who represented Science. Martyn was first of all a

Illustrated by Frank R. Paul



scientist, but almost as equally he was a man of intense imagination, and where the ordinary man crept along from detail to detail and required a complete model before being able to visualize the results of his work, Professor Martyn first grasped the great results of his contemplated work, the vast, far-reaching effects, and then built with the end in view.

The Professor had few friends. Ordinary men avoided him because they were unable to understand the greatness of his vision. Where he plainly saw pictures of worlds and universes, they vainly groped among pictures of his words on printed pages. That was their impression of a word. A group of letters. His was of the picture it presented in his mind. I, however, though I had not the slightest claim to scientific knowledge, was romantic to a high degree, and always willing to carry out his strange experiments for the sake of the adventure and the strangeness of it all. And so the advantages were equal. I had a mysterious personage ready to furnish me with the unusual. He had a willing subject to try out his inventions, for he reasoned quite naturally that should he himself perform the experiments, the world would be in danger of losing a mentality it might eventually have need of.

And so it was that I hurried to him without the slightest hesitation upon that, to me, momentous day of days in my life. I little realized the great change that soon would come over my existence, yet I knew that I was in for an adventure, certainly startling, possibly fatal. I had no delusions concerning my luck.

I found Professor Martyn in his laboratory bending, with the eyes of a miser counting his gold, over a tiny machine that might easily have fitted in my pocket. He did not see me for a moment, but when he finally looked up with a sigh of regret that he must tear his eyes away from his new and wonderful brain-child, whatever it might be, he waved me a little unsteadily into a chair, and sank down in one himself, with the machine in his lap. I waited, placing myself in what I considered a receptive mood.

"Kirby," he began abruptly at last, "have you ever read your Alice in Wonderland?" I gasped perhaps, in my surprise.

"Alice in —! Are you joking, Professor?"

"Certainly not," he assured me. "I speak in all seriousness.

"Perhaps I am playing with you unduly," he continued, "but do you remember the episode of the two pieces of cheese, if my own recollection is correct, one of which made one grow, the other shrink?"

I assented. "But," I said incredulously, "certainly you cannot tell me you have spent your time in preparing magical cheeses?"

He laughed aloud this time, and then, seeing my discomfort, unbur-

dened himself of his latest triumph.

"No Kirby, not just that, but I have indeed constructed a machine that you will be incapable of believing until you try it. With this little object in my lap, you could grow forever, until there was nothing left in the universe to surpass. Or you could shrink so as to observe the minutest of atoms, standing upon it as you now stand upon the earth. It is an invention that will make scientific knowledge perfect!" He halted with flushed face and gleaming eyes. I could find nothing to say, for the thing was colossal, magnificent in its possibilities. If it worked. But I could not resist a suspicion of so tiny a machine.

"Professor, are you in absolute earnest?" I cried.

"Have I ever jested about so wonderful a thing?" he retorted quietly. I knew he had not.

"But surely that is merely a model?"

"It is the machine itself!"

I WAS too astounded to speak at first. But finally, "Tell me about it," I gasped. "This is certainly the most fantastic invention you have made yet! How does it work?"

"I am afraid," suggested Professor Martyn, "that you could not understand all the technical details. It is horribly complicated. And besides, I am anxious to try it out. But I will give you an idea of it.

"Of course, you know that an object may be divided in half forever, as you have learned in high school, without being entirely exhausted. It is this principle that is used in shrinking. I hardly understand the thing's mechanism myself — it was the result of an accident — but I know that the machine not only divides every atom, every molecule, every electron of the body into two exactly equal parts, but it accomplishes the same feat in itself, this keeping pace with its manipulator. The matter it removes from the body is reduced to a gaseous form, and left in the air. There are six wires that you do not see, which connect with the body, while the machine itself is placed on the chest, held by a small belt that carries wires to the front of the body where the two controlling buttons are placed.

"When the user wishes to grow, he presses the upper button, and the machine then extracts atoms from the air which it converts, by a reverse method from the first, into atoms identical to certain others in the body, the two atoms thus formed joining into one large particle of twice the original size.

"As I have said, I have little idea of my invention except that it works by means of atomic energy. I was intending to make an atomic energy motor, when I observed certain parts to increase and diminish strange-

ly in size. It was practically by blind instinct that I have worked the thing up. And now I fear I shall not be able to discover the source of my atomic energy until I can put together, with great care, another such machine, for I am afraid to risk taking this apart for analysis."

"And I," I said suddenly, with the awe I felt for such a discovery quite perceptible, I fear, in my tone, "I am to try out this machine?"

"If you are willing," he said simply. "You must realize, of course, that there are a multitude of unknown dangers. I know nothing of the complete effects of the machine. But my experiments on inanimate objects have seemed satisfactory."

"I am willing to take any risks," I said enthusiastically, "if you are willing to risk your great machine. Why, don't you realize, Professor, that this will revolutionize Science? There is nothing, hardly, that will be unknown. Astronomy will be complete, for there will be nothing to do but to increase in size enough to observed beyond our atmosphere, or one could stand upon worlds like rocks to examine others."

"Exactly. I have calculated that the effect of a huge foot covering whole countries would be slight, so equally distributed would the weights be. Probably it would rest upon tall buildings and trees with ease. But in space, of course, no support should be necessary."

"And then, as you said, one could shrink until the mysteries of elements would be revealed. Of course, there would be danger in descending into apparent nothingness, not knowing where a new world-atom could be found upon which to stand. But dangers must be risked."

"But now, Kirby," remarked the Professor officially, "time passes, and I should like you to make your little journey soon that I may quickly know its results. Have you any affairs you would like to put in order, in case —"

"None," I said. I was always ready for these experiments. And though this promised to be magnificently momentous, I was all ready. "No, if I return in a few hours, I shall find everything all right. If not, I am still prepared."

He beamed in approval. "Fine. Of course, you understand that our experiment must take place at some secluded spot. If you are ready, we can proceed at once to a country laboratory of mine that will, I think, be safe."

I assented, and we hastily donned our overcoats, the Professor spending a moment or two collecting some necessary apparatus. Then we packed the machine in a safe box, and left his home.

"Are you all ready, Kirby?" The Professor's voice was firm, but my practiced ear could detect the slightest vibrations that indicated to me his intense inner feelings. I hesitated a moment. I was not afraid of going. Never that. But there seemed something partaking almost of

finality about this departure. It was different from anything I had ever felt before.

"All ready, Professor," I said cheerfully after a brief moment.

"Are you going to magnify or minimize yourself?"

"It shall be growth," I answered, without a moment's hesitation there. The stars, and what lay beyond . . . It was that I cared for. The Professor looked at me earnestly, deeply engrossed in thought. Finally he said, "Kirby, if you are to make an excursion into interstellar space, you realize that not only would you freeze to death, but also die from lack of air."

Walking to a cabinet in the rear of the room, he opened it and withdrew from it some strange looking paraphernalia. "This," he said, holding up a queer looking suit, "is made of a great quantity of interlocking metal cells, hermetically sealed, from which the air has been completely exhausted so as to give the cells a high vacuum. These separate cells are then woven into the fabric. When you wear this suit, you will, in fact, be enclosed in a sort of thermos bottle. No heat can leave this suit, and the most intensive cold cannot penetrate through it."

I quickly got into the suit, which was not as heavy as one might imagine. It covered not only the entire body, but the feet and hands as well, the hand part being a sort of mitten.

After I had gotten into the suit, the Professor placed over my head a sort of transparent dome which he explained was made of strong, unbreakable bakelite. The globe itself really was made of several globes, one within the other. The globes only touched at the lower rim. The interstices where the globes did not touch formed a vacuum, the air having been drawn from the spaces. Consequently heat could not escape from the transparent head piece nor could the cold come in. From the back of this head gear, a flexible tube led into the interior; it was connected to a small compressed oxygen tank, which the Professor strapped to my back.

He then placed the wonder machine with its row of buttons on my chest, and connected the six wires to the arms and other parts of my body.

Professor Martyn grasped my hand then, and said in his firm, quiet voice:

"Then goodbye, Kirby, for awhile. Press the first button when you are ready to go. May the Fates be with you!"

The Professor next placed the transparent head gear over my head and secured it with attachments to my vacuum suit. A strange feeling of quietness and solitude came over me. While I could still see the Professor, I could hear him talk no longer as sounds cannot pierce a

vacuum. Once more the Professor shook my hand warmly.

Then, somehow, I found myself pressing down the uppermost of three buttons. Instantly there was a tingling, electric flash all through my body. Martyn, trees, distant buildings, all seemed to shoot away into nothingness. Almost in panic, I pushed the middle button. I stopped. I could not help it, for this disappearing of all my world acted upon my consciousness. I had a strange feeling that I was leaving forever.

I looked down, and Professor Martyn, a tiny speck in an automobile far below, waved up to me cheerfully as he started his car and began to speed away. He was fleeing the immediate danger of my growth, when my feet would begin to cover an immense area, until I could be almost entirely in space. I gathered my courage quickly, fiercely, and pressed the top button again. Once more the earth began to get smaller, little by little, but faster. A tingling sensation was all over me, exhilarating if almost painful where the wires were connected upon my forearms, my legs, about the forehead, and upon my chest.

It never did seem as though I was changing, but rather that the world was shrinking away, faster and faster. The clouds were falling upon me with threatening swiftness, until my head broke suddenly through them, and my body was obscured, and the earth below, save tiny glimpses, as though of a distant landscape through a fog. Far away I could see a few tall crags that broke through even as had I, scorning from their majestic height the world below. Now indeed, if never before, was my head "among the clouds!"

But even the clouds were going. I began to get an idea of the earth as a great ball of thick cloud. There was a pricking sensation beneath my feet, as though I stood upon pine needles. It gave me a feeling of power to know that these were trees and hills.

I began to feel insecure, as though my support were doing something stealthy beneath me. Have you ever seen an elephant perform upon a little rolling ball? Well, that is how I felt. The earth was rotating, while I no longer could move upon it. While I pondered, watching in some alarm as it became more and more like a little ball a few feet thick, it took matters in its own hand. My feet slipped off, suddenly, and I was lying absolutely motionless, powerless to move, in space!

I watched the earth awhile as it shrank, and even observed it now as it moved about the sun. I could see other planets that had grown at first a trifle larger and were now getting smaller again, about the same size as the earth, tiny balls of no more than a couple of inches in diameter . . .

It was getting much darker. The sun no longer gave much light, for there was no atmosphere to diffuse it. It was a great blinding ball of fire

near my feet now, and the planets were traveling about it swiftly. I could see the light reflected on one side, dark on the other, on each planet. The sun could be seen to move perceptibly too, though very slightly. As my feet grew larger, threatening to touch it, I hastily drew them up with ease and hung suspended in space in a half-sitting position as I grew.

Turning my head away all at once, I observed in some surprise that some of the stars were growing larger, coming nearer and nearer. For a time, I watched their swift approach, but they gradually seemed to be getting smaller rather than larger. I looked again at my own system. To my amazement, it had moved what seemed about a yard from its former position, and was much smaller. The planets I saw no longer, but there were faint streaks of light in circles about the sun, and I understood that these were the tracks of the worlds that now moved about their parent too swiftly to be followed with the eye.

I could see all the stars moving hither and yon now, although they still continued to appear closer and closer together. I found a number lying practically on the plane of my chest, but above that they seemed to cease. I could now see no planets, only the tiny sun moving farther and farther, faster and faster along its path. I could discern, it seemed to me, a trend in its and its companions' path. For on one side they seemed to be going one way, and the opposite way on the other. In front, they seemed to move across my vision. Gradually I came to understand that this was a great circle swinging vastly about me, faster and faster.

I had grown until the stars were circling now about my legs. I seemed to be the center of a huge vortex. And they were coming closer and closer together, as though to hem me about. Yet I could not move all of me away. I could only move my limbs and head in relation to my stationary body. The nearest star, a tiny bright speck, was a few yards away. My own sun was like a bright period upon a blackboard. But the stars were coming nearer and nearer. It seemed necessary for me to move somehow, so I drew my legs up and shot them out with all my force. I began to move slowly away, having acted upon what little material substance there was in the ether.

The stars were soon only a few feet apart below me, then a few inches, and suddenly, looking out beyond them, I was struck with the fact that they seemed to be a great group, isolated from a number of far distant blotches that were apart from these. The stars were moving with incredible swiftness now about a center near which was what I imagined to be the sun, though I had lost track of it somehow. They merged closer and closer together; the vast group shrunk more and more, until finally they had become indistinguishable as entities. They were all part of a huge cloud now, that seemed somehow familiar.

What did it suggest? It was pale, diffused at the ends, but thick and white in the center, like a nebula — a nebula! That was it! A great light broke over me. All these stars were part of a great system that formed a nebula. It explained the mystery of the nebulae.

And there were now other nebulae approaching, as this grew smaller. They took on the resemblance of stars, and they began to repeat the process of closing in as the stars had done. The stars, universes within universes! And those universes but nebulae in another great universe! Suddenly I began to wonder. Could there be nothing more in infinity than universe after universe, each a part of another greater one? So it would seem. Yet the spell was upon me and I was not ready to admit such simplicity yet. I must go on. And my earth! It could not even be found, this sphere that had itself seemed almost the universe.

But my growth was terribly fast now. The other nebulae were merging, it would seem at first, upon me. But my slow progress through space became faster as I grew larger, and even as they came upon me, like flying arrows now, I shot above them. Then they, too, merged. The result was a vast nucleus of glowing material.

A great light began to grow all about me. Above I suddenly observed, far away, a huge brightness that seemed to extend all over the universe. But it began definitely. It was as though one were in a great ball, and the nebulae, a sunlike body now, were in the center. But as I became larger with every instant, the roof-like thing diffused, even as before things had converged, and formed into separate bodies, like stars. I passed through them finally, and they came together again behind me as I shot away, another great body.

A coincidence suddenly struck me. Was not this system of a great ball effect with a nucleus within similar to what the atom was said to be? Could the nucleus and its great shell be opposite poles of electrical energy, then? In other words, was this an electron — a huge electron composed of universes? The idea was terrible in its magnitude, something too huge for comprehension.

And so I grew on. Many more of these electrons, if such they were, gathered together, but my luck held and I passed beyond this new body thus formed — a molecule? I wondered. Suddenly I tired of the endless procession of stars coming together, forming ever into new stars that came together too. I was getting homesick. I wanted to see human faces about me again, to be rid of this fantastic nightmare. It was unreal. It was impossible. It must stop.

A sudden impulse of fear took earth again. All at once, I reached down and pressed the central button to stop.

But just as a swiftly moving vehicle may not stop at once, so could not

I. The terrific momentum of my growth carried me on, and the machine moved still, though slower. The stars seemed shooting upon me, closing about me. I could see no end of them before me. I must stop or they would be about me.

Closer in they came, but smaller and smaller. They became a thousand pinpoints shooting about me. They merged into a thick, tenuous cloud about me, thicker and thicker. I was shooting up now, but my growth had stopped. The cloud became a cold, clammy thing that yielded to the touch, and — and it was water! Yes, pure water! And I was floating in it . . .

Years . . .

Suddenly I shot up, out of the water, and fell back. Strength returned to me, and warmth, and love of life. It was water, something I knew, something familiar, a friend. And so I swam, swam on and on, until my feet touched bottom, and I was leaping forth out of the water onto the sand . . .

THERE IS no need to drag the tale out. I awoke finally from an exhausted sleep, and found myself in a world that was strange, yet familiar. It might have been a lonely part of the earth, except for an atmosphere of strangeness that told me subconsciously it was another world. There was a sun, but it was far distant, no larger than my moon. And vast clouds of steam hung over the jungles beyond the sand, obscuring them in a shimmering fog, obscuring the sun so that it danced and glimmered hazily through the curtain. And a perpetual twilight thus reigned.

I tried to tell myself I was in some strange manner home. But I knew I was not. At last, breaking beneath the weight of homesickness and regret, I surrendered to a fit of weeping that shamed my manhood even as I wept. Then a mood of terrible, unreasoning anger against Fate enveloped me, and I stormed here and there about the beach.

And so, all through the night, I alternately raged and wept, and when the dawn came I sank again in peaceful slumber . . .

When I awoke, I was calm. Obviously, in stopping I told myself I had been left in a cloud of atoms that proved to be part of another group of matter, another earth or atom, as you will. The particular atoms I was in were part of the ocean.

The only thing to do was return. I was ashamed of my madness now, for I had the means of return. In the third button . . . the bottom button. I saw no reason for delay. I splashed back into the water, and swam hastily out to the point where it seemed I had risen. I pushed the lowest button. Slowly I felt myself grow smaller and smaller, the sense of suffo-

cation returned, only to pass away as the pinpoints shot about me again, but away this time. The whole nightmare was repeated now, reversed, for everything seemed to be opening up before me. I thrilled with joy as I thought of my return to my home, and the Professor again. All the world was friend to me now, in my thoughts, a friend I could not bear to lose.

And then all my hopes were dashed. How, I thought, could I strike my own earth again? For even if I had come to the right spot in the water to a certainty, how could I be sure I would pass between just the right cloud of molecules? And what would lead me to the very electron I had left? And, after the nucleus, why should I not enter the wrong nebula? And even if I should hit the right nebula, how should I find my own star, my own earth? It was hopeless, impossible! . . . And yet, so constituted is human nature that I could hope nevertheless!

My God! Impossible as it is, I did it! I am certain that it was my own nebula I entered, and I was in the center, where the sun should be. It sounds fantastic, it is fantastic. The luck of a lifetime, an infinity, for me. Or so it should have been. But I looked where the sun ought to be found, in the central cluster. I halted early and watched long with a sinking heart. But the sun — was gone!

I lay motionless in the depths of space and I watched idly the stars that roamed here and there. Black despair was in my heart, but it was a despair so terrible that I could not comprehend its awfulness. It was beyond human emotion. And I was dazed, perhaps even a little mad.

The stars were tiny pinpoints of light, and they shot back and forth and all around like purposeless nothings. And ever would they collide, and a greater pinpoint would be born, or a thousand pieces of fragments would result. Or the two might start off on new tracks, only to collide again. Seconds it took them to cover what I knew to be billions of trillions of light-years.

And gradually the truth dawned upon me, the awful truth. These stars were suns, even as mine had been, and they grew and died and were reborn, it seemed now, in a second, all in a second. Yet fair races bloomed and died, and worlds lived and died, races of intelligent beings strove, only to die. All in a second. But it was not a second to them. My immense size was to blame on my part.

For time is relative, and depends upon size. The smaller a creature, the shorter its life. And yet, to itself, the fly that lives but a day has passed a lifetime of years. So it was here. Because I had grown large, centuries had become but moments to me. And the faster, the larger I grew, the swifter the years, the millions of years had rolled away. I remembered how I had seen the streaks that meant the planets going

about the sun. So fast had they revolved that I could not see the circuit that meant but a second to me. And yet each incredibly swift revolution had been a year! A year on earth, a second to me! And so, on an immensely greater scale, had it been as I grew. The few minutes that meant to me the sun's movement through the ether of what seemed a yard had been centuries to the earth. Before I had lived ten minutes of my strange existence, Professor Martyn had vainly hoped away a lifetime and died in bitter despair. Men had come and died, races had flourished and fallen. Perhaps all mankind had died away from a world stripped of air and water. In ten minutes of my life . . .

And so I sit here now, pining hopelessly for my Mother Earth. This strange planet of a strange star is all beyond my ken. The men are strange and their customs curious. Their language is beyond my every effort to comprehend, yet mine they know like a book. I find myself a savage, a creature to be treated with pity and contempt in a world too advanced even for his comprehension. Nothing here means anything to me.

I live here on sufferance, as an ignorant African might have lived in an incomprehensible, to him, London. A strange creature, to play with and to be played with by children. A clown . . . a savage . . . ! And yearn as I will for my earth, I know I may never know it again, for it was gone, forgotten, non-existent, a trillion centuries ago . . . !



AMAZING FACTS



Artist's concept of a spherical antenna three Kilometers wide positioned in orbit around Earth to listen for extraterrestrial signals. Illustration by NASA.

Is Anybody Out There?

Everyone wonders about extraterrestrial life, but does anybody do anything about it?

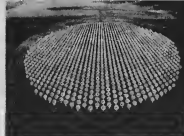
The answer is "yes." NASA's Project Cyclops is developing a concept which will enable scientists to search for outer-space intelligence by means of radiotelescopes.

By such means, they hope to pick up signals being given off by anyone out there, in much the same way we are giving off signals from earth via TV, radio, radar and so forth.

It is calculated that a complex system (an "orchard") of radio telescopes will be needed, the size dependent on the strength of the signal and its distance from us. At present, we have the capacity for receiving signals (similar to earth signals) up to about one light year away. Since the nearest star system is four light years away, we wouldn't be able to detect any signals unless they were much stronger than what we are capable of producing — or unless they are being transmitted from some sort of space probe.

The signals we might expect to receive would most probably come from a civilization in our galaxy deliberately attempting to communicate with us. They would logically be far more advanced than we are, because they would be spanning far greater distances than we are capable of handling. The language of the signals would probably be based on fundamental principles of mathematics, physics and chemistry, which are the same throughout the galaxy.

There are several radiotelescopes now in use; one called the "Big Dish"



Artist conception of a Cyclops system of radiotelescopes. Top: an "orchard"; Bottom: ground-level view of the system. Illustration by NASA.

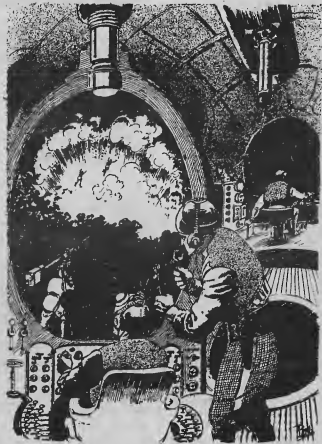
at Arecibo, Puerto Rico; the 85-foot telescope at Green Bank, W. Va., used by astronomer Frank Drake to send the Project Ozma message to the stars; and one at Bonn, Germany, plus a few others.

Other systems are in the designing stage.

Why do we need SETI (Search for Extra-Terrestrial Intelligence)? Many people feel we should just forget space and stick to the business here on earth. This is a very narrow view — of a type that often serves to impede man's progress. With all of our earthly problems, we could indeed benefit from contact with a civilization eons older and wiser than ourselves. They might well hold the answer to our ultimate survival.

THE FIRST BUCK ROGERS

A Frank R. Paul illustration



From the August, 1928 issue of *Amazing Stories*.



The Time Machine (1927)

PAUL PORTFOLIO

greater (and much safer) discovery. He was about to become the first invisible man. Shivering with anticipation he switched on the machinery and smiled as the faint, blue beam appeared. Of course, the ray was really colorless; he'd just added the tint to make it easier to find. The idea had come from reading about how the gas company scented their product so customers could detect leaks.

Once positioned under the glow, he was careful to expose every inch of his figure. It wouldn't be very effective to have a disembodied shoe or ear giving away his presence. Satisfied, he moved in front of a full length mirror where, sure enough, he was able to watch as his feet and legs faded from sight. Jubilant, he did a little dance step but, unable to see his own extremities, tripped, landing with a painful jar. More cautiously he returned to the mirror to console himself with the disappearance of his middle, chest, neck and head.

Suddenly the room around him began to dim. Had he gone too far? Was his creation running wild? With a nauseated feeling he realized that his eyes had become transparent and, with nowhere to focus the light now passing through them, were useless. In his sudden panic, Leo Furphy felt his way to what he thought was the control room, but was in fact the hall door. He stumbled blindly out to the top of the steps, hesitated, and went crashing down.

When he awoke to the stares of concerned neighbors he was sore but able to walk. The treatment, effective for forty-five minutes, had worn off and he classed it as a failure. But Leo Furphy had a better idea.

THE FURPHLY Ray was flickering properly in its new, altered form. Pish posh, its inventor thought, why did I ever bother with *invisibility* when *invulnerability* is the thing for which to strive? No matter, for now he was stepping into the blue light, ready to feel total imperviousness infuse him.

It worked! Matches couldn't burn him, knives couldn't cut him, and banging his head against the wall, as he had done so regularly over the years, no longer pained him. All that remained was one test. He rushed happily down the apartment steps, crowbar in hand, and pried open the elevator doors. Looking up to the top of the shaft he saw the ancient, clanking conveyance beginning its slow descent. Barely suppressing a chuckle, he waited. As expected, several tons of elevator settled on him, crushed him almost flat, but did no harm.

Above he could hear voices, first confused, then frightened, and finally resigned as the passengers realized they were stuck. The superintendent was there ten minutes later explaining that the mechanism was fouled by something (me, thought Leo) and

he wouldn't be able to extricate them until it was freed. It would take about an hour.

A what? Leo wanted to scream. He had only forty-five minutes left before the treatment wore off. Why hadn't he realized invulnerability was dangerous without unlimited strength. He squirmed, he sweated, he regretted not having given the super any Christmas gifts all these years. He waited.

When the bulky machinery squealed back to life only minutes before his time was gone, Leo grabbed the crowbar and, as the elevator rose, forced the doors to drag himself, shaking and scared, up to his apartment. His only consolation was that now he had a better idea.

A FAINT humming was the only indication that the Furphy Ray had been further modified, but to its creator the change was significant. Constantly embarrassed by his failures in this era, he was about to launch himself through time to a more agreeable future. Making a quick final check of the controls, he placed himself in the lambert column. True to his expectations, the clock on the wall seemed to accelerate its movements as he began his rush through time. The automatic shut-off extinguished the blue light and he was off on a sixty-year journey that would take him only an hour. The world outside became a flicker of days and

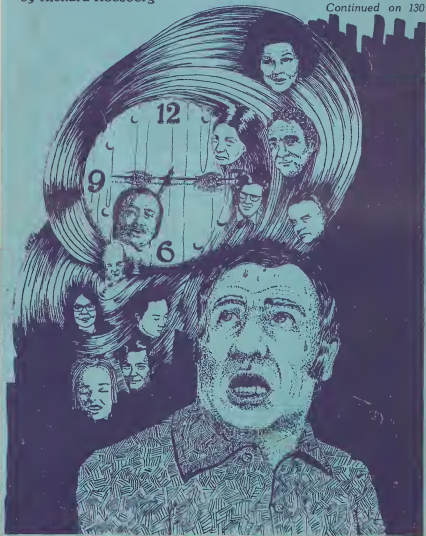
nights as he, in his envelope of decelerated air and light, watched from safety. He had imagined he would blink out of the world's sight and then suddenly reappear at his trip's end. Now, however, two years (two minutes) into it, he noticed an unmoving object, as constant as the walls opposite him. It was some sort of camera. How interesting. He had been discovered and apparently appeared statue-like to his observers. Now they were trying to detect life. So, he realized belatedly, though I am passing quite quickly, I still must exist in each bit of time, and such is the nature of time that they see me super-decelerated, my hour stretched to their sixty years. This was an added bonus. At the end of this experiment Leo Furphy would be a celebrity with six decades of news clippings with which to catch up. He was like some famous race driver who zoomed through every town and city, making his reputation in record time. But, he realized sickeningly, what if one of those viewers reached out to shake that racer's hand, or what if any of his observers moved him even slightly? At their relatively super-accelerated pace they might rip him apart. Even a well-meaning cleaning lady could be deadly. He looked out into the passing blur and waited. What could go wrong in forty-five minutes? Not much. What could go wrong in forty-five years? A lot. ●

FURPHLY'S LAW

by Richard Roesberg

LEO FURPHLY was ready to conduct the great experiment. He begrudged the time lost healing after his recent unfortunate encounter with unaided flight, but now that the Furphly Ray had been modified he was ready to reveal to the world a

Continued on 130



Illustrated by Scott Mavor